S. HRG. 98-18

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED RESTART OF THE L-REACTOR AT THE SAVANNAH RIVER PLANT, AIKEN, S.C.

HEARING

BEFORE THE

COMMITTEE ON ARMED SERVICES UNITED STATES SENATE

NINETY-EIGHTH CONGRESS

FIRST SESSION

NORTH AUGUSTA, S.C.

FEBRUARY 9, 1983

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ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED RESTART OF THE L-REACTOR AT THE SAVANNAH RIVER PLANT, AIKEN, S.C.

WEDNESDAY, FEBRUARY 9, 1983

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
North Augusta, S.C.

The committee met, pursuant to notice, at 12 o'clock noon, at the North Augusta High School auditorium, North Augusta, S.C., Senator Strom Thurmond presiding.

Present: Senator Strom Thurmond of South Carolina; and Senator Mack Mattingly of Georgia.

Also present: James C. Smith, professional staff member.

OPENING STATEMENT BY SENATOR STROM THURMOND, PRESIDING

Senator THURMOND. The committee will come to order.

Ladies and gentlemen, members of the media, and my many friends from South Carolina, and Georgia, it is a real pleasure for me to be here today in this fine facility which has been so graciously made available so that we can discuss a matter which is of great concern to many people in the Savannah River plant area, from Augusta to Savannah on the Georgia side, and from Aiken to Beaufort on the South Carolina side.

This is a hearing of the Senate Committee on Armed Services. At my request, the committee chairman, Senator John Tower of Texas, agreed to schedule this field hearing. Senator Tower himself is presently in Europe meeting with our allies on national defense matters, and has asked me, as the ranking majority member, to chair this hearing. Participating with me is the distinguished Senator from Georgia, Senator Mack Mattingly, a member of the Senate Appropriations Committee, and I am delighted that he could be with us here today.

Let me make a few comments to set the stage for this hearing.

The Savannah River plant is vital to our national defense. As all of you here today are aware, our nuclear weapons specialists have determined that the L-reactor at Savannah River must be restarted in order to attain the levels of defense nuclear material established by the President. In terms of both cost and time needed to upgrade and prepare an older reactor for operation, the L-reactor presents the best alternative for producing these materials. The L-reactor originally began operation in 1955, and was placed on standby status in 1968. The proposed reactivation of the L-reactor is currently scheduled for October 1983. Both Presidents Carter and Reagan have called for preparations to be able to restart the L-reactor, and the Congress has approved spending of some $200 million to upgrade the reactor and get it ready to restart. Senator Mattingly and I were able to visit the reactor this morning for a briefing on this proposed restart.

A number of environmental concerns have been raised, however, regarding the reactivation of the L-reactor. The airing of those concerns, which range from thermal pollution to the flushing of radioactive cesium into the Savannah River, is the purpose of our hearing here today. Participants should confine their testimony to these concerns. We are not here to get into a general debate on nuclear weapons. The Energy Department, in preparation for the restart, prepared an environmental assessment in compliance with the National Environmental Policy Act. As a result of that assessment, the Department issued a finding that the restart would not significantly impact the environment. Many have taken issue with that finding, including several State officials. Today we want to hear from experts on this subject and from interested parties on both sides in an attempt to give the public an opportunity to express their concerns relative to the possible environmental impacts of the restart.

I am pleased to provide this opportunity for the people of South Carolina and Georgia to express their views with regard to the environmental consequences of the proposed restart of the L-reactor. While the reactor is of critical importance to our goal of increased production of additional defense materials, we must never take chances with the public's health and safety and the integrity of our environment and drinking water. The State of South Carolina has been a gracious host to the Savannah River plant since its inception. Our citizens have been pleased to make a contribution to the national security of our country. At the same time, the Savannah River plant has been of tremendous benefit to the economy of our State. Many do not realize it, but this facility is the largest single employer in South Carolina. When new activities at Savannah River plant are proposed, however, the people of our State and the region deserve to have their understandable concerns thoroughly aired and addressed.

In setting up this hearing, I announced in the press the general details of the hearing and asked for all interested parties to notify me in writing by January 28, 1983, if they wanted to appear. Attached to my statement is a list of the newspapers which carried my announcement of the hearing. We have received requests to participate in the hearing and additional letters or petitions for insertion in the hearing record. We are going to make every effort to hear as many of you that have asked to testify as possible. The following general agenda will apply:

We will first hear from Government officials—the Energy Department, the Environmental Protection Agency, and elected officials. Then we will turn to those who have asked to participate, except in this regard, Congressman Derrick needs to get back to Washington as soon as possible, so we are going to take him as the first witness. That's the only exception that we are making now. To keep the hearing balanced, I have elected to put together two lists.

One list includes those supporting the L-reactor restart, the other list includes those concerned about the L-reactor restart. We will alternate between lists to be sure that both sides get equal time. Finally, we will wrap up with summary testimony by Mr. Bob Morgan from the Savannah River plant.

Let me emphasize that we have a very large number of witnesses. I want to accommodate as many as we possibly can. So, I say to the witnesses, please be brief. You can make a brief summary and the entire statement can go in the record. Your prepared statement will go in full in the record. You are encouraged to summarize the key points. If a point has been made by an earlier witness, you need not repeat the same point if it is in your prepared statement. The main reason for the hearing is to be sure all the different points are brought out. You have all been advised as to the time you will have to present your testimony. I hope you will try to cut that time in half, so that we may hear from the maximum number of people. If time gets away from us, we may not get to everyone on the agenda. If we do not get to you, your statement will be included in the public record.

Before we begin, let me publicly thank some of the key officials who made this hearing possible.

Principal James Martin and Assistant Principal John Bell here at the North Augusta High School have made this splended facility available. They also fed us in the school cafeteria. They even gave us chicken today and I must remark that the food has improved since I went to high school.

The Army, at Fort Gordon, has handled many of the logistical arrangments—the speaker system, the stenographer, and many of the details necessary to put a hearing like this together. Maj. Cleve Rowley has served as the project officer. We all thank you, Major Rowley.

Mr. Walter E. Newman, the Director of Public Safety here in North Augusta, has been most cooperative in handling parking and insuring that we have uniformed policemen to help.

There are, of course, many others and I have not time to name them all, but we do thank each of you who have helped us to arrange this hearing and will participate in this hearing.

I will now call on the distinguished Senator from Georgia, Senator Mattingly, for comments and remarks that he cares to make.

STATEMENT BY SENATOR MACK MATTINGLY

Senator MATTINGLY. Thank you, Senator Thurmond.

Though I'm not a member of the Armed Services Committee, under whose oversight this hearing on the start of the L-reactor at the Savannah River plant is being held, I am a member of the Senate Appropriations Committee, whose jurisdiction covers funding for startup and operation of the facility. I am also a resident of the Georgia coast not far below the point where the Savannah River empties into the Atlantic Ocean. I love the Georgia coast and its adjacent wetlands, and I have a personal interest, and a public obligation to see that Georgia's environment and Georgia's citizens are not in any way endangered by the planned startup of the L-reactor later this year. So, I am pleased, Senator Thurmond, to be a part of this very important hearing today, and I am honored to be conducting this hearing jointly with such a distinguished Member of the U.S. Senate, and such a respected citizen from Georgia's sister State of South Carolina. The people of South Carolina can be proud of the lead that Senator Thurmond has taken on the issue before us today in order to insure that every possible step is taken to protect the health and environment of your State. I would also like to put in a good word for Senator Nunn. He's unable to be here today, but he has sent his Legislative Assistant for Military Affairs, Mr. Arnold Punaro, and I am sure that Senator Nunn shares many of the same concerns as Senator Thurmond and myself. But, forgive me, Senator Thurmond, if I say I'm primarily here out of concern for the interest of Georgia, and out of concern for the interest of our country as a whole. That is why I want to state at the outset of these hearings what those interests are.

The issue before this hearing is the effect of the startup and operation of the L-reactor for the manufacture of plutonium and tritium, two very important strategic materials, will have upon the environment of Georgia and South Carolina. When I say environment, I mean not only the plant and wildlife of our States, but I mean, also, the quality of air, water, and food that we grow. We are not concerned here today with the ongoing debate over nuclear weapons or nuclear power. As far as I'm concerned, anyone here today who hopes to turn this hearing into a debate over nuclear disarmament should now leave. There is no question of whether plutonium and tritium are important to the national defense of the country; they are. There is no question of whether the Savannah River plant is extremely important to our national defense; it is. What is the question is whether or not the Federal Government has taken adequate precautions at the Savannah River plant to protect the safety and health of the people of Georgia and South Carolina, and that is the only issue of concern here today. With that, let me say, for the record, that I am not satisfied that the Federal Government, specifically the Department of Energy, has taken adequate precautions to protect the safety and health of the people of Georgia and South Carolina, and, if the officials here today from the Department of Energy do not supply better answers to those questions concerning safety and health than they have already given, I would demand that a full environmental impact study be conducted before the L-reactor can be reactivated.

The facts, as presented by DOE, are simple. The Savannah River plant is the Federal Government's primary facility for the production of weapons grade tritium and plutonium. The plant was built in 1953. There are five reactors on the site. Of those five, only three are now in operation. The reactor that we are concerned with, the L-reactor, was taken out of operation in 1968. Under a Presidential memorandum of November 1982, the L-reactor is to be brought back on line in October of this year. The DOE completed an environmental assessment in August 1982. It concluded that there will be, and I quote, no significant impact, end quote, on the environment because of restarting the L-reactor. The DOE caused a FONSI, a finding of no significant impact, a term you will probably hear more of today. They base their FONSI on the 14 years the L-reactor was in operation before 1968, and the impact on the environment during that time. Now, the DOE can throw FONSI's out here on the table all day long, but that will be not good enough or answer enough. The DOE must admit that a lot has changed since 1968, both in the stringency and environmental standards and in the method of measuring impact. Just to say that no danger could be found between 1954 and 1968 will not wash. I hope that Mr. Troy Wade, who is testifying for DOE here today, will address this point adequately.

In addition to the foregoing and further, there are a few other pertinent facts. For instance, the fact that the L-reactor will be dumping, each minute, about 250,000 gallons of slightly radioactive water into Steel Creek, which flows through surrounding wetlands into the Savannah River. The fact that 250,000 gallons a minute will enter Steel Creek at a temperature of about 200° F., which is in violation of South Carolina and Federal standards for water temperature discharges, and the fact that if a commercial nuclear plant were to operate in that manner, the EPA would fine the pants off the offending company and shut the plant down.

Mr. Jim Setser, of Georgia Department of Natural Resources, will be testifying today. I understand that the Georgia's DNR's Environmental Protection Division just recently completed a statewide radiation monitoring report, in which water, air, agricultural commodities, like milk and wildlife—like fish—were tested. It is my understanding that the impact of the L-reactor and the Savannah River plant was projected for downstream on the Savannah River. I hope that Mr. Setser will enlighten us on the results of that report. But, first, I just want to quote Mr. Setser's remarks in a recent newspaper article on the restart of the L-reactor. He said, "the bottom line is, that we don't know how it will affect the health of the people." If that indeed is the bottom line, and I believe that it is, then I hope the testimony that we will hear here today will answer the following questions, and just briefly:

One, why is a full environmental impact statement unnecessary; two, why is the Savannah River plant not subject to the same environmental and health standards that a commercial nuclear plant is subject to; and three, why can't cooling towers or holding ponds be constructed to alleviate the problem of dumping hot water into Steel Creek? I hope that we can answer these questions today, because, if we cannot, DOE will not have my support in restarting the L-reactor.

Thank you very much.

Senator THURMOND. Thank you, Senator Mattingly.

Our first witness, as I stated, will be Congressman Butler Derrick, the able and distinguished Representative from the Third Congressional District. Congressman Derrick, you may proceed.

STATEMENT BY REPRESENTATIVE BUTLER C. DERRICK, A REPRESENTATIVE FROM SOUTH CAROLINA

Congressman DERRICK. Thank you, Senator Thurmond, and Senator Mattingly. I appreciate the efforts that you have made to be here and to convene this hearing today. I especially appreciate the opportunity to testify before you today on an issue of great importance to my congressional district, our State, and our Nation. I commend you and your committee for providing an opportunity for a public hearing of the issues involved in the restart of the Savannah River plant's L-reactor.

The situation we face today is a complex one. Efforts to upgrade the L-reactor into operation have been on the way for several years. The Federal Government has spent approximately $100 million in this effort to date and anticipates spending $36.5 million this year to complete the preparation. The startup date for the reactor—October 1983—is but one-half year away. The materials to be processed by the reactor are of critical importance to our Nation's defense posture. In spite of this, however, there is a considerable perception that we have failed to assess and adequately address the environmental impact that may result from this action. This is no small matter. I think the level of interest in these proceedings today is indicative of the importance the people of this State and the State of Georgia attach to environmental problems. The defense requirements of this Nation simply cannot proceed at the expense of our environment. Adequate defense and environmental quality are two pressing goals for our country. But, they cannot be put in competition with one another. One represents the quality of life in our Nation, the other, our ability to defend it. Pragmatism must govern our deliberations on this matter, and neither goal can be given short shrift if our efforts are ultimately to prove successful.

Mr. Chairman, I would advise the committee throughout my tenure as the Representative of the Third Congressional District of South Carolina, I have had ample opportunity to work with and also assess the operation of the Savannah River plant. Although we may not have always agreed, I can attest here today that I have never been misled or ill-advised by officials of the plant on any aspect of their operations. The Savannah River plant, in operation since the early 1950's, is one of our Nation's oldest nuclear defense installations. There have been no fatalities or major health problems associated with the operation of the facility. Moreover, the Department of Energy and the Du Pont Corp. have established an outstanding safety record at the facility and have addressed contested issues in a most informative and straightforward manner.

At the center of discussion today is the L-reactor, one of the five production reactors located on the Savannah River plant reservation. These reactors, which all operated from 1953 to 1964, produced critical defense materials to meet the Nation's requirements for nuclear weapons. The L-reactor is one of two reactors shut down and placed on standby status during the 1960's due to a decrease in demand for the materials they produced. Given the increased need for these materials now, the L-reactor reactivation was judged to be the most expeditious and least costly option available. During the intervening years between this reactor shut down and its proposed startup, however, this Nation experienced a great awakening of consciousness to concerns over our environment, questions which were once left to the realm of scientists are now questions of general public concern, and so they should be. The public must be afforded input in decisions which will impact upon their environment. The environmental concerns raised over the restart of the reactor are potentially significant. The release of radioactive cesium into the Savannah River; the discharge of extremely hot water into Steel Creek, a tributary of the Savannah River; the potential destruction of significant amounts of wetlands and, the potential elimination of habitat for certain endangered species. As everyone here today is aware, these environmental questions were the subject of an environmental assessment conducted by the Nuclear Utilities Service under contract of the Department of Energy. The findings of this report suggests that the anticipated impacts to water quality, air quality, solid waste, and radiological dose to the work force and the public were nearly equivalent or less than similar impacts during the reactor's first operational period from 1954 to 1968. Based on this information, the Department fo Energy has submitted a finding of no significant impact; that the resumption of L-reactor operation is not a major Federal action significantly affecting the quality of the human environment. Therefore, the Department of Energy believes that an environmental impact statement need not be performed. The National Environmental Policy Act of 1969, which became law subsequent to the construction and operation of the L-reactor, requires that the Federal Government perform an environmental impact statement on all major Federal actions which might impact the environment. It is the contention of some local and national environmental organizations that the restart of this reactor is a major action, and that it does require the performance of a full environmental impact statement. To further these efforts, these groups have filed suit to force the Department of Energy to perform an environmental impact statement and, as you are aware, our State has formally joined this litigation.

Mr. Chairman, although it is hoped that our Nation will soon be in a position to bring about bilateral arms reductions, we must be practical about the world in which we live. It is a world in which we must defend our Nation and our interests abroad as to the types of weapons that will require the materials produced by the L-reactor. Without question, the time involved in the preparation of a complete and formal environmental impact statement will affect the production of these materials we utilize in our Nation's defense. At the same time, we must guarantee that the release of cesium into the Savannah River and hot water into Steel Creek will not be dangerous to the health and welfare of the citizens of South Carolina and Georgia. We must guarantee that there won't be excessive and unnecessary destruction of wetlands and habitat for endangered species of wildlife. It seems to me that those who are concerned about these issues, together with the Department of Energy, must be flexible enough to reach a conclusion on these matters without causing a delay in meeting our defense needs. I charge both groups with the responsibility to come together with open minds to reach a compromise that will be satisfactory and which will meet the goals outlined above.

Mr. Chairman, the major flaw to be found in the environment assessment performed by the Department of Energy is not so much its findings, but the fact that it effectively eliminated the opportunity for public participation in this process. As I have already noted, there are questions of genuine and legitimate public concern. To facilitate a resolution of the situation, therefore, I propose an outline under which an environmental impact statement would be prepared under an expedited basis:

One, a draft environmental impact statement would be completed by July 1983, and a final statement would be issued by January 1984.

Two, either this hearing today or one to be convened within 1 month would serve as a scoping hearing for the nuclear process. Such scoping hearing would be followed by a reasonable period for public comment.

Three, the work associated with the preparation for startup of the L-reactor would continue on schedule.

Four, a work to restart the L-reactor moves forward with the preparation of an environmental impact statement, the Department of Energy would increase monitoring and surveillance to insure that nothing exceeds the limits established in the environmental assessment. If it is determined that the operation of the reactor is approaching the limits specified in the environmental assessment, the reactor will be shut down until appropriate actions are taken.

Five, after the alternatives for dealing with the environmental impacts, as set out in the environmental impact statement, an implementation plan will be developed after review and concurrence by the State of South Carolina.

Mr. Chairman, I hope that what I have outlined here today may be a workable compromise to the situation that we face. Clearly, neither side will win entirely under the plan that I have outlined, but we will have insured that the public would have had an opportunity to participate in the decisionmaking process. South Carolina has long understood and taken pride in the invaluable role we play in the Nation's defense. Likewise, we know well and appreciate the value of the many environmental attributes our State possesses. It is in the interest of preserving and enhancing both of these most worthy goals that I publicly call upon both parties in this debate to meet and in good faith attempt to resolve the issues and contentions through the initiative that I have outlined.

Senator, I thank you very much and I would be pleased to answer any questions you might have.

Senator **THURMOND**. Thank you very much, Congressman Derrick. Thank you very much for your appearance here and I know how busy you are. We understand the urgency for you to get back to Washington, and we deeply appreciate your coming here and testifying on this occasion.

Congressman **DERRICK**. Thank you very much.

Senator **THURMOND**. Any questions?

Senator **MATTINGLY**. No questions.

Senator **THURMOND**. Thank you very much.

Our next witness—we have a panel actually, Mr. Troy E. Wade, Principal Deputy Assistant Secretary of Energy for Defense Programs; Mr. Robert Davies, Deputy Assistant Secretary of Energy for Environment, Safety, and Health; Mr. Bob Morgan, Manager of the Savannah River operations office. If you gentlemen would come to the witness table we would be very pleased to hear your testimony at this time.

If you have detailed statements, we will put the entire statement in the record and you can summarize your statements, if you will, to save time.

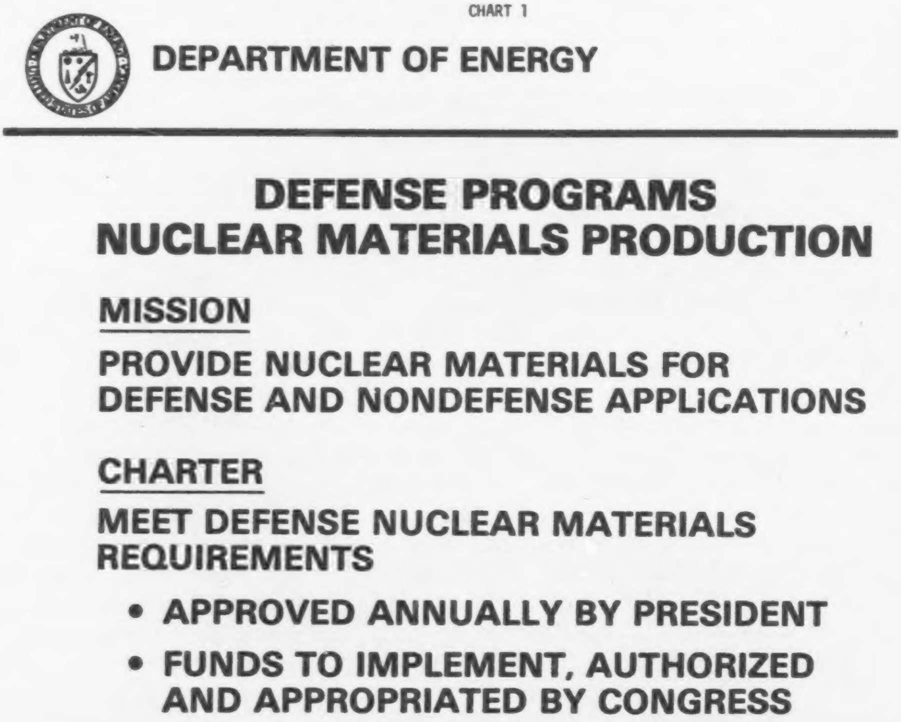
STATEMENT BY TROY E. WADE, DEPUTY ASSISTANT SECRETARY FOR DEFENSE PROGRAMS FOR THE DEPARTMENT OF ENERGY; ACCOMPANIED BY ROBERT L. MORGAN, MANAGER, SAVANNAH RIVER OPERATIONS OFFICE, DEPARTMENT OF ENERGY

Mr. Wade. Thank you, Mr. Chairman, and Senator Mattingly.

We are pleased to be here today. We hope that our presentation here today will answer those questions raised by Senator Mattingly, as well as the other questions which have been raised. I will submit my entire statement for the record. With your permission, I will summarize it, using a few charts, and then be pleased to respond to your questions.

May I have the first chart, please?

CHART 1



DEPARTMENT OF ENERGY

DEFENSE PROGRAMS
NUCLEAR MATERIALS PRODUCTION

MISSION

PROVIDE NUCLEAR MATERIALS FOR DEFENSE AND NONDEFENSE APPLICATIONS

CHARTER

MEET DEFENSE NUCLEAR MATERIALS REQUIREMENTS

- **APPROVED ANNUALLY BY PRESIDENT**
- **FUNDS TO IMPLEMENT, AUTHORIZED AND APPROPRIATED BY CONGRESS**

The Department of Energy through the Atomic Energy Act of 1954 is charged with the responsibility to produce all nuclear materials required for the U.S. weapons program. The requirements are developed annually and are provided through the National Security Council to the President for his approval. Approval by the President and subsequent authorization and appropriation by the Congress constitutes the legal authority and mandate to the DOE for nuclear materials and weapons production.

The Savannah River plant is our principal site for fulfilling the Department's mission to produce nuclear materials.

CHART 2

DEPARTMENT OF ENERGY

SAVANNAH RIVER PLANT

- **LARGEST PAYROLL IN SOUTH CAROLINA**
- **10,000 FULL TIME EMPLOYEES - EXPECTED TO RISE BY APPROXIMATELY 1,000 IN THE NEXT 10 YEARS PLUS A PEAK OF SEVERAL THOUSAND ADDITIONAL CONSTRUCTION JOBS**
- **FUNDING**
  - **— $728 MILLION IN FY 1982**
  - **— GREATER THAN $850 MILLION IN FY 1983**
  - **— EXPECTED TO BE GREATER THAN $1 BILLION IN FY 1984**
- **LARGEST PRODUCER OF PLUTONIUM**
- **SOLE PRODUCER OF TRITIUM**
- **PRODUCES NUCLEAR MATERIALS FOR CIVILIAN APPLICATIONS**

This facility employs approximately 10,000 people. As you said, Mr. Chairman, it is the largest single payroll in South Carolina, and has funding in fiscal year 1982 of approximately three quarters of a billion dollars. Employment and funding is expected to grow substantially in the future as shown on this chart. It is the largest producer of plutonium and the sole producer of tritium needed to maintain this country's nuclear weapons stockpile.

In 1980, the Department determined that additional production capacity would be needed to meet the requirements for nuclear materials approved by President Carter in October 1980. These increased production needs stem largely from efforts to modernize the weapons in the stockpile and meet the continual requirement for tritium which radioactively decays. Since L-reactor was the only reactor which could be reactivated in sufficient time to meet these production needs, the President recommended, and Congress approved, in December 1980, a project to restore and upgrade the L-reactor to permit startup as soon as practicable.

During the period of time that L-reactor was on standby, many modifications were made to improve the safety, environmental protection, and operational efficiency of the three reactors currently operating at the Savannah River plant.

CHART 3

DEPARTMENT OF ENERGY

L REACTOR

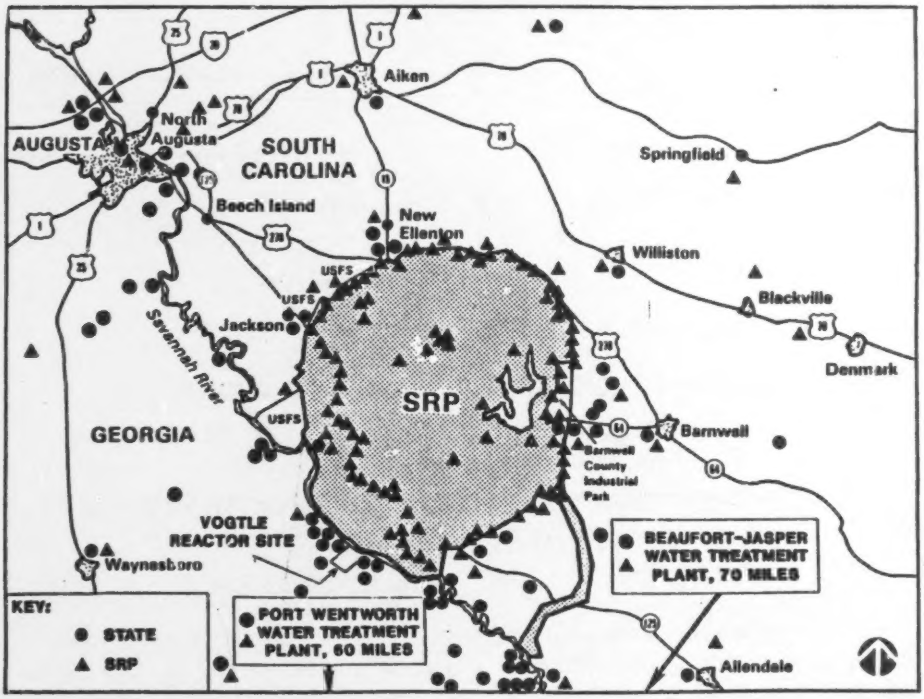
- **OPERATIONAL FROM 1954 TO 1968**
- **STANDBY STATUS FROM 1968 TO PRESENT**
- **UPGRADE PROGRAM 1981-1983 ($214 MILLION)**
  - **INCORPORATE IMPROVED SAFETY/ENVIRONMENTAL EQUIPMENT**
  - **REPLACE DETERIORATED AND OBSOLETE EQUIPMENT**
  - **EQUIVALENT TO OTHER THREE OPERATING REACTORS**

These improvements, in addition to the replacement of deteriorated and obsolete equipment, are being incorporated into L-reactor to bring it to a condition equivalent to that of the operating reactors. Therefore, although the reactor was constructed in the earlier 1950's, it will include state-of-the-art technology and equipment to assure safe and reliable operation.

This project was undertaken by the Department with the same high degree of concern for the protection of the health and safety of the public, plant personnel, and the environment which has always been a fundamental element of our activities at the Savannah River plant. This is evidenced, in part, by the extensive environmental protection, monitoring, and safety activities which have been ongoing at the plant for many years.

CHART 4

SRP AND STATE MONITORING/SAMPLING LOCATIONS


AUGUSTA
North Augusta
SOUTH CAROLINA
Aiken
Springfield
Beech Island
New Ellenton
Williston
Blackville
Denmark
USFS
Jackson
Savannah River
SRP
GEORGIA
Barnwell
Barnwell County Industrial Park
VOGTLE REACTOR SITE
Waynesboro
KEY:
● STATE
▲ SRP
● ▲ PORT WENTWORTH WATER TREATMENT PLANT, 60 MILES
● ▲ BEAUFORT-JASPER WATER TREATMENT PLANT, 70 MILES
Allendale

For example, as you see on this chart, an extensive surveillance program has been maintained since 1951 and is one of the largest of its type in the world. Each year about 30,000 samples of air, water, vegetation, soil, and foods are collected within a 125-mile radius of the Savannah River plant. Over 90,000 separate analyses are conducted on these samples and some of the sampling stations are operated by the plant and some are operated independently by the State. So, there is a check on all the monitors. This program has clearly established that the radiation dose from the Savannah River plant to the population in the region falls well within all applicable requirements.

CHART 5

DEPARTMENT OF ENERGY

CONCERN FOR ENVIRONMENT AT SAVANNAH RIVER PLANT

- EXTENSIVE ENVIRONMENTAL SURVEILLANCE PROGRAM
  - MAINTAINED SINCE 1951
  - MEASURES RADIONUCLIDE CONCENTRATION AROUND THE PLANT
  - MEASURES RADIATION EXPOSURE TO POPULATION
  - DOSE TO POPULATION IN REGION
    - MEETS ALL APPLICABLE REQUIREMENTS
    - MUCH LESS THAN 1% OF BACKGROUND
- IMPROVED ENVIRONMENTAL CONTROL EQUIPMENT INCORPORATED

Furthermore, the dose is much less than 1 percent of the dose received from naturally occurring radiation by the residents in this area. Release control equipment to improve environmental conditions has been incorporated based on this continuing process.

The safety features of the operating reactors have been continually upgraded over the years incorporating advances in technology, such as the availability of reliable computers for reactor control and safety functions.

CHART 6

DEPARTMENT OF ENERGY

CONCERN FOR SAFETY AT SAVANNAH RIVER PLANT

- INCORPORATE TECHNOLOGY ADVANCES IN REACTORS
- THREE MILE ISLAND LESSONS LEARNED
- RESULTS
  - 115 REACTOR YEARS OF SAFE OPERATION
  - AEC'S "BEST EVER" SAFETY AWARD

The lessons learned as a result of the Three Mile Island incident, for example, include a major strengthening of the reactor operator training program, construction of a reactor simulator to support the training program, and upgrading of the facilities for remote detection and control of critical functions. The attainment of 115 reactor years of safe operation has certainly demonstrated and provided evidence of the effectiveness of the activities of the Savannah River plant.

The National Environmental Policy Act of 1969 (NEPA), as amended, established requirements on Federal Agencies to consider the environmental impacts of their proposed actions.

CHART 7

DEPARTMENT OF ENERGY

PRINCIPAL ENVIRONMENTAL REQUIREMENTS

- **NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) OF 1969**
- **COUNCIL ON ENVIRONMENTAL QUALITY (40 CFR 1500-1508)**

— IMPLEMENTING REGULATIONS

The Council on Environmental Quality (CEQ), created by the act, promulgated regulations for implementing the procedural provisions of the NEPA. The regulations are applicable to all Federal agencies.

In early fiscal year 1981, the Department initiated an extensive program to determine the environmental effects of restarting L-reactor. It was decided that it would be appropriate to prepare an environmental assessment utilizing this data to assess the significance of the potential environmental effects and to determine the need for preparing an environmental impact statement.

The environmental assessment on the restart of L-reactor, issued in August 1982, provides a comprehensive review of the anticipated environmental effects of the proposed resumption of operation. Unlike most environmental evaluations, which are based on engineering designs and theoretical estimates, the L-reactor environmental assessment utilized the data and experience gained from 14 years of actual L-reactor operation. The principal areas of environmental effects during the 1954 to 1968 operating period were located on the Savannah River plantsite. The resumption of L-reactor operation would affect essentially the same areas previously affected.

In accordance with NEPA and the regulations of CEQ, the DOE Assistant Secretary for Environmental Protection, Safety, and Emergency Preparedness reached a finding of no significant impact for the restart of L-reactor. This finding was based on the results of the analyses in the environmental assessment, which showed that impacts from the resumption of L-reactor operation related to water quality, air quality, solid waste, and radiological dose to the public and work force are expected to be somewhat less than those experienced during the 1954 to 1968 operating period. In all other respects, the analyses demonstrated that the differences in impacts expected to result from resumed operation and the previous operations are negligible. Considering the previous impacts in the area due to the operation of L-reactor, and viewed in the context of the physical setting and current use of the Savannah River plantsite, the DOE found that the impacts resulting from resumption of L-reactor operation should not be significant. The finding of no significant impact was published in the Federal Register on August 23, together with a notice that the environmental assessment was available, and over 600 have been distributed to this date.

Mr. Chairman, with your permission, I would now ask Bob Morgan to describe briefly the NEPA process and discuss the specific issues found in the environmental assessment.

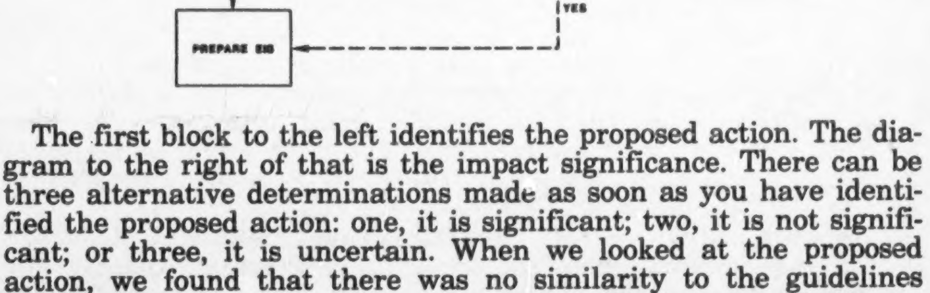
Senator THURMOND. We will be pleased to hear from you, Mr. Morgan.

Mr. MORGAN. I believe we have followed the letter, spirit, and intent of the law, and we have here on chart 8, the National Environmental Policy Act process.

CHART 8

NEPA PROCESS

RESUMPTION OF L-REACTOR OPERATIONS


IMPLEMENT ACTION
NO
IDENTIFY PROPOSED ACTION
IS IMPACT SIGNIFICANT ?
UN-CERTAIN
PREPARE ENVIRONMENTAL ASSESSMENT (EA)
IS IMPACT SIGNIFICANT ?
NO
PREPARE FINDING OF NO SIGNIFICANT IMPACT (FONSI)
IMPLEMENT ACTION
YES
YES
PREPARE EIS

The first block to the left identifies the proposed action. The diagram to the right of that is the impact significance. There can be three alternative determinations made as soon as you have identified the proposed action: one, it is significant; two, it is not significant; or three, it is uncertain. When we looked at the proposed action, we found that there was no similarity to the guidelines which said that this clearly calls for an Environmental Impact Statement. We were uncertain, and because of the authorization legislation, we decided to do an environmental assessment as provided by the law. After preparation of an environmental assessment, there can be a finding of significant impact or of no significant impact. DOE's Assistant Secretary for environmental protection, safety, and emergency preparedness decided, after reviewing the environmental assessment, that there was not a significant impact. If there had been a significant impact, we would have then been required to prepare an environmental impact statement (EIS).

I would like to say that we have done a comprehensive document. We have continued to respond to the concerns that have been expressed. We have been dealing in good faith with the Beaufort-Jasper County Water Authority and State officials, and we are currently conducting discussions relative to the thermal impact of the facility as we discuss renewal of our permit for discharging water into the streams. I want to assure you that we are in good faith negotiations with the State at this time, Mr. Chairman.

CHART 9

KEY AREAS ANALYZED

THERMAL DISCHARGE

- WETLANDS
- FISHERIES
- COOLING WATER ALTERNATIVES

RADIOLOGICAL DOSE COMMITMENT

- INDIVIDUAL DOSE
- REGIONAL POPULATION DOSE
- DRINKING WATER/CESIUM-137

ACCIDENT RISK

ENDANGERED SPECIES

I would like to briefly mention the impacts that have been identified in the assessment. First was the impact on the wetlands. There are approximately 300 to 400 acres in the Savannah River swamp area adjacent to the Savannah River that will have hot effluent put back onto it. That's the area that is just below where Steel Creek enters the swamp, and that area had received hot effluent before. We will damage no new area of trees and the cypress swamp will remain as it was at the time we shut down in 1968. The increased water withdrawal from the Savannah River will add about five fish killed per day because of impingement on the intake screens. We have reveiwed the cooling water alternatives and, in later testimony, I will discuss all the alternatives that we have looked at.

On the radiological dose, I would like to say that, first, in the environmental assessment, the major concern that we have heard is that the cesium that is currently in Steel Creek will be resuspended and put into the Savannah River. We have conducted experiments. We have analyzed the effect and we have made measurements at the Beaufort-Jasper Water Authority. There is an Environmental Protection Agency standard that says that you may drink water with cesium in it at concentrations up to 200 picocuries per liter. Our estimate of the concentration in the water leaving the Savannah River plant in Steel Creek is such that it would be far below that standard by the time it gets to the Beaufort-Jasper Water Authority. This standard is based on drinking two quarts of water a day. In order to get to the level that EPA allows and says is safe to drink, you would have to drink 40,000 quarts of water per day your entire life, and you would still be safe, according to the Environmental Protection Agency's standards. So, we conclude there is no impact and it's physically impossible for anybody to even reach the EPA limit by drinking water from Beaufort-Jasper.

There is an NRC standard on the release of radioactive cesium from a source. We are a factor of a thousand below that limit after the remobilization in Steel Creek. I could drink 16 quarts of water per day right at Steel Creek as it goes into the Savannah River and not reach the EPA standards. We have found that the cesium is not a problem, and it is not significant at all.

We are currently running three reactors. L-reactor is outfitted with all the improvements that we have put on the other three, and we feel that the accidental risk is less than one in a million and we have 115 years of reactor experience to back that up.

There are two endangered species on the site which potentially can be affected by L-reactor operation the red cockaded woodpecker and the American alligator. We have received notification from the Fish and Wildlife Service that requirements under section 7 of the Endangered Species Act have been adequately met. I would like to provide a written statement at a later point in time, but I did want to briefly cover the issues at the outset.

Senator THURMOND. All right.

Mr. WADE. Mr. Chairman, I have one more chart (chart 10) that I would like to show which is a summary. This is the DOE conclusion.

CHART 10

DEPARTMENT OF ENERGY

CONCLUSIONS

- L REACTOR NEEDED BY OCTOBER, 1983 TO MEET DEFENSE REQUIREMENTS
- ENVIRONMENTAL INTERESTS OF CITIZENS OF SOUTH CAROLINA AND GEORGIA WILL BE PROTECTED
- DOE HAS COMPLIED WITH NEPA REQUIREMENTS
- ALL MAJOR ISSUES ADEQUATELY ADDRESSED IN ENVIRONMENTAL ASSESSMENT

The restart of L-reactor by October 1983 is needed to meet the Presidentially mandated requirements.

The restart of the L-reactor by October 1983 is one of the initiatives needed to meet defense requirements for nuclear materials. Activities at the Savannah River plant on preparations for resumption of L-reactor are being conducted in a manner which will assure protection of all the environmental interests of the people of South Carolina and Georgia. The Department has complied with the requirements of the National Environmental Policy Act with respect to the restart and no new substantive issues have been raised which were not adequately addressed in the environmental assessment.

Mr. Chairman, that concludes my summary. Mr. Davies, Mr. Morgan, and I will be pleased to answer questions and Mr. Morgan will summarize at the end of the day.

Senator THURMOND. I have several questions and either you or the other gentlemen can answer them, if you care to.

Is there any alternative to the restart of the L-reactor, and could we get the plutonium we need from any other source?

Mr. WADE. There is no alternative source of additional material. We have to restart L-reactor.

Senator THURMOND. Is the October 1983 restart date critical? How long could restart be delayed before it would critically affect our nuclear weapons program?

Mr. WADE. To keep our initiatives on schedule, restart in October of 1983 is necessary. Certainly a month or two wouldn't make a critical difference, but a significant slip would endanger the security of the country.

Senator THURMOND. How long would it take to do an environmental impact statement on the L-reactor restart and how much would it cost?

Mr. WADE. We estimate that it would take about 18 months. And it would cost somewhere between $1 and $2 million. Now, that's following the schedule as outlined in the act. We will certainly look at Congressman Derrick's proposal. I really can't speak to an expedited version.

Senator THURMOND. I will withhold further questions at this time until we hear from Mr. Morgan later in the hearing.

I wonder if any of you care to comment on the statement by Congressman Derrick, or would you wish to study it further?

Mr. WADE. I think we need to study it further, Mr. Chairman.

Senator THURMOND. Senator Mattingly, do you have any questions?

Senator MATTINGLY. Yes; one of the major concerns of the State of Georgia is the problem of storing waste. Georgia has been absolutely opposed to bedrock storage, which would contaminate the Tuscaloosa aquifer, the main source of water for Georgia. Can the DOE assure us that they will not come back in a year or two with a bedrock storage proposal?

Mr. WADE. I can assure you that we will not, Senator. We have an environmental impact statement on the defense waste processing facility, which is currently authorized onsite. This project is estimated to cost approximately $900 million. It will take the waste from the waste tanks, solidify it in the form of borosilicate glass and temporarily store it above surface before it's shipped to a permanent repository offsite. The bedrock storage was discussed in that EIS and it has been dismissed. We will not bring it up again, sir.

Senator MATTINGLY. Why could not cooling towers or some other method, like holding ponds, be constructed to alleviate the problem of dumping the hot water into Steel Creek?

Mr. WADE. There are a series of eight alternatives to direct discharge that we have looked at in the EA. These were covered in detail during the latter part of the testimony and in the statement for the record, if that is acceptable, sir.

Senator MATTINGLY. OK, we may want to also talk about it here because I'm sure there are a lot of people interested.

Mr. WADE. Yes, sir, it will be covered here in open testimony.

Senator MATTINGLY. Very good. Thank you.

Senator THURMOND. Thank you very much.

We will now ask Mr. Glen L. Sjoblom to come to the witness table.

Mr. Sjoblom, I believe you are Director of the Office of Radiation Programs with the Environment Protection Agency; is that correct?

Mr. SJOBLOM. Yes, sir.

Senator THURMOND. Mr. Charles Doolittle, was the previous administrator before; is that correct?

Mr. SJOBLOM: Right, sir.

Senator **Thurmond**. We will now proceed with two witnesses from the Environmental Protection Agency; Mr. Glen L. Sjoblom, Director of Office of Radiation Programs, and Mr. Charles R. Jeter, Regional Administrator, region IV, Atlanta, Ga.

Mr. Jeter, I believe you are from South Carolina?

Mr. **Jeter**. That's correct, sir.

Senator **Thurmond**. Now, before I ask these gentlemen to proceed, let me make a few comments as to why I wanted them to appear.

When the issue of the proposed restart of the L-reactor began, to get public attention then, several parties called for an Environmental Impact Statement. I wrote the Administrator of the Environmental Protection Agency, the Honorable Anne Gorsuch, and asked her to give me an independent opinion on two points. First, I wanted to know if the Energy Department had complied with the National Environmental Policy Act in proceeding to get the L-reactor ready to restart. Second, I asked EPA to give me their judgment as to whether or not the Energy Department was taking adequate precautions to protect the environment in the Savannah River plant area. My letter to EPA, dated December 8, 1982, will go into the record (see enclosure 2).

On January 28, 1983, Ms. Gorsuch responded to my letter in a comprehensive way. Her letter to me will be placed in the record, also, but let me quote briefly from that letter. First, with regard to the question of whether or not the Energy Department has complied with the National Environmental Policy Act, Ms. Gorsuch says:

> As to your procedural inquiry, the Department of Energy's environmental assessment on the restart of the L-reactor is a comprehensive document which sets forth a detailed discussion of the expected environmental effects of the proposed project, including a comparison of the anticipated impacts the post-1984 operation with the environmental impacts of the pre-1968 operation, and indicates no net increase in environmental effects between the two. The environmental assessment provides a sufficient basis for the Department of Energy's decision that it was not necessary to prepare an environmental impact statement, particularly in light of the fact that this is a restart operation. Therefore, the Environmental Protection Agency does not question the Department's conclusion that its procedures comply with the pertinent provisions of the National Environmental Policy Act and with regulations issued pursuant to the act.

Second, with regard to environmental concerns, Ms. Gorsuch commented on the six primary concerns as follows:

The first is the impact of routine radioactive releases on the water in the plant area: EPA's knowledge indicates that there is no significant environmental hazard from routine radiological releases.

The resuspension of sediments containing some radioactive materials is the second related question. EPA believes there will be no significant environmental hazard from this release.

A third environmental impact discussed in DOE's assessment is the withdrawal of water from the river for reactor cooling. These water withdrawals would involve some impingement, or entrainment, of fish, fish eggs, larvae, and other aquatic organisms. We do not believe the impingement, or entrainment, would be significant.

Fourth, the liquid discharges from the L-reactor to Steel Creek and the river are subject to a permit issued under the NPDES program which has been delegated to South Carolina by EPA. I do not feel it is appropriate for EPA as the delegating agency to publicly comment on this issue, at this time.

Fifth, one of the possible environmental impacts of the proposed thermal discharges will be the impact on certain wetlands in the area. The hot water would return the area to its pre-1968 condition. An additional impact discussed in the environmental assessment is the L-reactor's impact on ground water underlying the site. Ground water contamination impacts are being carefully evaluated and appropriate mitigative measures are in the planning stages.

In summary, EPA seemed to support the environmental studies done by the Energy Department and reaches the same conclusions that the Energy Department did with regard to the environmental consequences of the restart of the L-reactor.

Gentlemen, you may proceed.

Mr. Jeter. Thank you, Senator Thurmond.

The EPA's role in this project—and you've covered quite a bit of the substance of it today—rests with our regulatory authority under the Clean Water Act, Clean Air Act, the Safe Drinking Water Act, and other applicable Federal environmental legislations and Executive orders. As envisioned by Congress, the authority for much of this has been delegated to the State of South Carolina. This includes the authority to issue permits under the Clean Water Act for the discharge of cooling-process waters to surface waters. The programs are administered by the South Carolina Department of Health and Environmental Control.

Each of these programs is subject to overview by EPA and on significant projects, such as the L-reactor restart, EPA works very closely with the State in the permitting process. As we have heard, there are several adverse environmental impacts associated with the project. These are associated also with most projects that we deal with. This includes the cooling water intake from the Savannah River, the discharge of thermal effluents into Steel Creek and the Savannah River, the ground water impact from seepage basins, the effect on wetlands habitat due to thermal discharges, the effect of the action on endangered species, and radiological issues.

We have analyzed these impacts and reviewed the environmental assessment concerning these impacts. Briefly, we concluded as follows:

The startup of this reactor will result in a total withdrawal, for all of the reactor systems which are presently there, of approximately 12.5 percent of the river's average flow. Under these withdrawal rates, the assessment estimates a loss of about five percent of the fish eggs and four percent of the fish larvae.

The thermal impact as outlined in the environmental assessment of the proposed operation of the L-reactor will result in the discharge of about 250,000,000 gallons per day of cooling water at approximately 176°—that's summer temperature. The proposal in the environmental assessment is to discharge without any controls, such as cooling towers or cooling ponds, to reduce the temperature. Through this process and this proposal, the water quality standards can be attained in the Savannah River.

Ecologically, there will not be any significant thermal impact on the Savannah River. We have heard discussions as to fact that there will be an impact on Steel Creek itself.

One issue that we would like to bring up that hasn't been touched on much this afternoon has to do with the ground water impact. Concerning the nonradiological liquid releases, the L-reactor would require support from existing area waste processors. Any additional waste water will go to seepage basins. Savannah River plant officials have agreed to conduct a very comprehensive hydrogeological investigation of the site, looking at all of the ground water impacts and the ground water effects. In the final analysis, we feel that, as these programs are implemented, the ground water contamination concerns will be carefully evaluated and appropriate mitigating measures will be taken.

The wetlands habitat impact has been discussed. The effect on endangered species has been discussed.

The important aspect that we need to think about on this project, and I will get into it now, is that we have, in fact, in places right now waste processors to insure that the Savannah River plant and other facilities in the Southeast—the State of South Carolina, the State of Georgia—meet the environmental requirements. Chief among these, in the case of this project, are the mechanisms to control the discharge of pollutants into the waters of the United States. The State of South Carolina Department of Environmental Control has the NPDES permit program to address these. Therefore, it will be the State's obligation, in the first instance, to determine at what point the waters of the State are subject to the regulations, what limitations could be placed on the discharge of the L-reactor. It would have to satisfy both technology based requirements under Federal laws, and State water standards. This whole NPDES permit issuing process is an established and appropriate mechanism to evaluate the proper control mechanism for the discharge.

Moving on to our summary of the nonradiological aspects, we believe that the Environmental Assessment, developed by DOE, is basically a valid analysis of the environmental impact; that we have processors subject to permit in place and operational to analyze and mitigate the various impacts. In most cases, South Carolina's Department of Health is the lead Agency. EPA has the overview role.

The procedures are in place to evaluate ground water impacts and mitigate those. The programs are in place to monitor the actual discharges from the various sources, to monitor the air, the water, ground water, the plant, and surrounding areas.

The extensive monitoring network, the South Carolina Department of Health and Environmental Control, the Georgia Department of Natural Resources both monitor the air and the river itself. I think that with the processors that we have in place, the monitoring programs, we can insure compliance with the requirements and insure that the Federal laws, the State laws, the citizens of Georgia and the citizens of South Carolina will be adequately protected.

Senator Thurmond, at this time, I would like to introduce Mr. Glen Sjoblom, who is the Director of the Office of Radiological Programs for EPA at the national level, who will touch on the radiological impacts of this particular project.

Senator THURMOND. Mr. Sjoblom, we will be glad to hear from you.

Mr. SJOBLOM. Mr. Chairman, Senator Mattingly, I am pleased to have this opportunity to describe EPA's evaluation of the radiological aspects of the restart of the L-reactor. EPA's evaluation is based on our review of the Environmental Assessment report prepared by the Department of Energy, as well as our examination of relevant monitoring data collected by the States of South Carolina and Georgia. In addition, we recently conducted a field survey of radioactivity in the air emissions from operations at the Savannah River plant. Last, we performed various modeling analyses to estimate the radiological effect of current as well as future releases at the plant. EPA's review has involved personnel with radiation expertise from the Office of Radiation Programs in Washington, the Regional Office in Atlanta, and the Office of Radiation Programs Eastern Environmental Radiation Facility in Montgomery, Ala.

The Agency has concluded that renewing the operation of the L-reactor should not create any significant radiological impacts on the public. The remainder of my testimony will describe the impacts we believe are likely to occur, which form the basis for this conclusion.

First of all, the EPA reviewed the radiological effect of liquid and airborne releases from the reactor and the pathways by which exposure to the public might result. First, I would like to address the releases of waste water containing radioactivity. The two most important radionuclides in this respect are tritium and radiocesium.

Some of the radioactivity produced in the reactor enters processed water in the spent fuel disassembly pool. In prior operations, such water was periodically discharged directly into Steel Creek. The pool water following restart of the L-reactor will, instead, be processed through filters and deionizers to clarify the water and to remove essentially all of the particulate and soluble radioactivity before being discharged to seepage basins onsite. The treatment will not remove tritium contained in the water. There are no feasible technologies available that would allow tritium to be collected and removed for alternate disposal.

The L-reactor is expected to discharge up to about 10,000 curies of tritium annually in the seepage basin. About 30 percent of that tritium discharged to the seepage basin will evaporate. The remaining tritium, about 7,000 curies eventually will seep into the ground below the basin.

Along with the tritium, there will only be a few tenths of a curie of other radioactivity discharged to the seepage basin. Ultimately, the tritium will reach the water table at a depth of about 30 feet. Seepage basins are used at Savannah River plant to provide a delay between the time the water is discharged until it reaches the surface stream, such as the Steel Creek. This delay allows radioactivity to decay and become less radioactive before reaching the streams. Short lived radionuclides are held up in the soil for sufficient periods to decay to stable elements. However, tritium does not totally decay during this transport process. It moves underground toward Steel Creek at the same rate as the ground water. En route toward the creek, it is diluted with other groundwater.

Earlier operations of the L-reactor released about 8,500 curies of tritium per year into Steel Creek, whereas it is estimated that future releases to Steel Creek will be somewhat less, due to this holdup process, or about 6,000 curies per year. Steel Creek in turn flows into the Savannah River.

Radiocesium is the second radionuclide which has received some public concern. Due to the addition of the filters, deionizers, and the seepage basin in the liquid discharge path, no significant new source of radiocesium discharge into Steel Creek will result. However, some of the radiocesium discharged to Steel Creek before 1970 and currently attached to sediments in Steel Creek will become resuspended due to the resumed flow of reactor cooling water. The current inventory has been estimated to be about 67 curies and DOE has recently estimated that about 5 curies of radiocesium will be resuspended in the Steel Creek water during the first year of L-reactor operation. Some radiocesium may be redeposited in the swamp before reaching the river, some will be deposited in the sediments of the river and a remaining small part will be carried and diluted in the river flow.

The Environmental Protection Agency national interim primary drinking water regulations, promulgated under the provisions of the Safe Drinking Water Act, became effective in June 1977, and apply to the community water supply systems such as those at Beaufort-Jasper, S.C., and Port Wentworth, Ga., downstream of the Savannah River plant. These regulations include limits for radionuclides, such as tritium and radiocesium, that will limit radiation doses to the water users to less than 4 millirems per year. A millirem is simply a unit of radiation dose. Both of these water supply systems have been monitored by the States and radiation exposures in recent years have been estimated, as a result, to be about 0.28 millirem per year. Based on the expected releases from the restart of the L-reactor, its contribution has been estimated at up to 0.04 additional millirem per year from tritium and radiocesium from the L-reactor, or a contribution of about one-seventh of the total. To put this in perspective, the total from all the Savannah River plant operations, including the L-reactor, would be about 0.32 millirem per year, which is about one-twelfth of the EPA drinking water standard and about one three-hundredths of the natural background radiation in the vicinity.

In the past, the U.S. Department of Energy, South Carolina, and Georgia have conducted extensive radiological environmental monitoring in the vicinity of the Savannah River plant. DOE has indicated that it will continue the studies to determine the movement and the redistribution of radiocesium after the restart. The results will aid in assessing the removal of cesium from Steel Creek and in assessing radiological doses to individuals and populations off the site.

In addition to the Department of Energy's monitoring, the South Carolina Department of Health and Environmental Control, as well as the Georgia Department of Natural Resources plan to continue to monitor both the air and water in the surrounding areas and downstream of the facility. We understand that South Carolina plans to continue to monitor the river once the L-reactor becomes operational. The results of the State's monitoring programs are published annually in their environmental surveillance reports as are the results of the Georgia program. South Carolina and Georgia also have primary authority for insuring that drinking water meets the EPA's standards, and, consequently, they are required to analyze the public drinking water supplies for this purpose. We believe that such monitoring will provide continuing assurance to the public of the control of liquid releases of radioactivity from the Savannah River plant.

Next, I will focus on releases of radioactivity to the atmosphere. I would note that EPA is required by some amendments to the Clean Air Act to publish proposed standards for airborne emissions of radionuclides.

One of the various sources of radionuclides which EPA is required to consider is Department of Energy facilities. As part of our information-collection activities to carry out this responsibility, EPA conducted a field study at the Savannah River plant in December 1982. The objectives of the study were to compare DOE and EPA stack sampling techniques, field measurements, and airborne dispersing calculations. The study would assure that the plant and EPA are using comparable measurements and modeling techniques.

In conjunction with the field study and to support the EPA's program, EPA estimated the impacts of the projected airborne releases from the restart of the L-reactor. These estimates were made by applying state-of-the-art environmental transport and dose assessment models. As in the liquid pathway, tritium releases are a predominant contributor to the airborne pathway. The results of these analyses would indicate that the dose to the maximum exposed individuals offsite will be about 0.6 millirem per year in the tenth year of L-reactor operations. The Department of Energy estimated that the dose is about two times this amount of about 1.2 millirem per year. We consider these estimates to be in reasonable agreement. Further, the difference may be explained by the fact that EPA calculated a hypothetical dose to an adult, whereas DOE conducted the calculations for a hypothetical dose to a young person. In any event, this dose of about 1 millirem per year is about 1 percent of the natural background radiation we all receive each year in this area.

In summary, the Department of Energy analyzed releases from restart of the L-reactor to determine whether the transport of radioactivity to all likely pathways would have a significant impact on public health. These analyses that were in the environmental assessments were all reviewed by the Environmental Protection Agency. Our review of the Department of Energy analyses and other radiological data on the projected radioactive emissions from the restart of the L-reactor does not indicate a significant additional radiological impact on the environment. The releases and likely impacts are expected to be well within applicable standards. Consequently, the public should be sufficiently protected by the actions planned by the DOE. Continuation of the radiological environmental monitoring programs by DOE, as well as both States, should provide adequate assurance to the public and these should be continued. That's all I have to say.

Senator THURMOND. Anything else, Mr. Jeter?

Mr. JETER. Senator Thurmond, the only thing I that I would comment on, particularly when it comes to concern about downstream dosages, is that you often hear the concern that any level of radioactivity is too much, and without debating that point, I think our analysis has shown that the impact of the facility is only a very minute amount of the natural radiation the people are already receiving. In the case of drinking water, one three-hundredths at Beaufort-Jasper, in the case of air emissions, one one-hundredth of what you would naturally receive in this particular area.

Senator THURMOND. Our hearing today is to examine if there's any hazard or any danger to the health of the people upon the restart of this L-reactor. I want to ask you a simple question, and as a representative of the Environmental Protection Agency of the United States, do you see any hazard or danger here on the restart of this reactor.

Mr. JETER. No, sir.

Senator THURMOND. Mr. Sjoblom?

Mr. SJOBLOM. No, sir. As I indicated in my testimony, I don't believe that the radiological emissions from the plant would create any adverse radiological impact on the public.

Senator THURMOND. Senator Mattingly, do you have any questions?

Senator MATTINGLY. Yes. Mr. Sjoblom—all of these are for the record, of course—a report from the State of Georgia Environmental Protection Agency has found elevated levels of tritium in the milk and water in the vicinity of the Savannah River plant. Although the levels are within the safe range, it was still 50 times normal. Will the restart of the L-reactor increase the discharge of tritium?

Mr. SJOBLOM. The amount of tritium will be increased from what it is today, yes, sir, by—on the order of 20 percent.

Senator MATTINGLY. And would it remain in a safe level?

Mr. SJOBLOM. The effects of those releases will, in the actual exposure of people, be within levels that are within the standard, yes, sir.

Senator MATTINGLY. Thank you. Mr. Jeter, once again, I think all of these questions, for clarification for both sides is, why is the Savannah River plant not subject to the same environmental and health standards as a commercial nuclear plant is subject to?

Mr. JETER. I think basically they are. The case that you have at the Savannah River plant is like that of reactors other than the L-reactor, where you had a historical operation, starting back in the 1950's, when they were the state-of-the-art. When the permitting process came along later, the belief was that a lot of those on-site streams had been used for cooling and there was very little that could be done about them. Now if a new plant were going to start up, a new facility, it would be subject to a different type of construction. The fact is that at other operating facilities in South Carolina, Georgia, the southeast, that were old facilities, I think they're looked at a little differently from new facilities. In fact, most of our environmental law contains different criteria for a new facility versus an old facility.

Senator **Mattingly**. In your estimation why is a full environmental impact statement not necessary?

Mr. **Jeter**. As I indicated, I think the issue is one where we already have the mechanism, through the NPDES permit, which I have mentioned, which controls the thermal discharge, for example. We already have the mechanisms to implement the controls through that permit measure and I think the Environmental Assessment itself is a very thorough analysis of impact.

Senator **Mattingly**. The EA, environmental assessment versus environmental impact statement, what is the main difference in it?

Mr. **Jeter**. Well, probably the main difference has to do with the procedures you go through. The environmental impact statement does provide for greater public input, greater review procedures, greater opportunity for the general public to be involved in a decisionmaking process.

Senator **Mattingly**. Does it take about the same length of time to do it?

Mr. **Jeter**. Well, right now—you've heard Energy's testimony on how long it would take to complete one of them.

Senator **Mattingly**. I mean how long would the environmental assessment take?

Mr. **Jeter**. Excuse me?

Senator **Mattingly**. How long would the environmental assessment take?

Mr. **Jeter**. I don't know. I think they testified just about 18 months, in that general range.

Senator **Mattingly**. If we had started with an environmental impact statement we probably wouldn't be sitting here today in an open hearing? You don't have to answer that, thank you very much. That's all the questions I have.

Mr. **Jeter**. Thank you.

Senator **Thurmond**. Thank you very much, gentlemen. Next we have the witnesses from the office of the Governor of South Carolina, Governor Riley, Mr. David M. Reid, executive assistant for energy and natural resources, and the attorney general of South Carolina. We are very pleased to have Mr. Travis Medlock, the new attorney general. Any time that you gentlemen are ready to proceed, we will be glad to hear from you.

Mr. **Reid**. Thank you, Senator Thurmond, very much. If I may, I would like to briefly divert a moment from my prepared text that I have submitted to the committee to comment on recent newspaper accounts concerning the relationship between the State of South Carolina and the Savannah River plant.

For the purposes of the Armed Services Committee and the Senate in Washington, it has been reported that there is now a turning point in the long history of friendly relations between South Carolina State government and the Savannah River plant. For Governor Riley, I should say that he is not trying to effect commission of this facility and has no wish other than to continue the excellent relations that he, his staff, and other State officials have enjoyed with the Savannah River plant in the past, particularly during the first 4 years of his administration. Governor Riley is, as all the Savannah River plant and DOE officials well know, very serious about his constitutional charge for the protection of public health and safety of all South Carolinians. Let there be no misunderstandings in this committee and within the Senate in Washington that, given proper assurances of protection of the public's health and safety, Governor Riley will work and continue affirmative support for this facility and its operations. Governor Riley wanted me to commend Senator Thurmond and the entire committee for having this hearing in North Augusta today and providing him, through me and others, the opportunity to be heard on this very important matter. In addition to the significant considerations of environmental impact, the legal and the regulatory considerations arising from potential environmental impacts of this proposed action are significant in themselves. Governor Riley, as a result of deliberations by State environmental regulatory officials, State legal officials and other counsel did, on January 11, 1983, conclude that the process provided through the preparation of an environmental impact statement would be the best process available for assuring maximum public confidence in the final decisions of our national and our State governments in this matter. Such a process can provide a central point where all relevant information can be presented, reviewed, debated, and addressed. Such a central focus, where each and every relevant concern can be adequately and publicly addressed, does not now exist. In its absence, public concern is and will increase commensurate with the degree to which that concern is not publicly addressed. As Governor of the people of the State of South Carolina, Governor Riley desires not only that the ultimate decision in this matter be correct, correct under the law and correct under environmental protection regulations, but that these decisions enjoy the public confidence that they are correct. Confidence in Government decisions are increasingly requiring greater confidence in the process of decisionmaking and the Governor views that public confidence can be maximized by a decision of the U.S. Department of Energy to not include its review and decision process with the environmental assessment but to continue that process through the preparation of an environmental impact statement. This open process allows for the public scrutiny of the assumptions and findings which will support ultimate decisions. It will only be with such an open process that the necessary public confidence will be obtained.

On behalf of the Governor, I commend this committee, once again, for recognizing, through the conduct of this hearing, the necessity of continuing the confidence of South Carolina and Georgia that their health and safety is being protected during all operations of the Savannah River plant. Governor Riley urges you to join in his request to the U.S. Department of Energy for the beginning of the preparation of an environmental impact statement.

Thank you for your invitation to the Governor and for your allowing me to appear today on his behalf.

Senator THRUMOND. Mr. Attorney General, we'd also be glad to hear from you.

Mr. MEDLOCK. Senator Thurmond and Senator Mattingly, I wish to divert briefly, also, to the remarks made by Mr. Reid on behalf of Governor Riley to the effect that the good relationship that has existed between the Federal agencies involved and the State of South Carolina will certainly be honored and promoted throughout my administration as attorney general and I am confident throughout the administration of Governor Riley. I simply have taken actions consistent with responsibilities imposed upon me as the attorney for the State of South Carolina and hope that the matters will be resolved in a relatively—30 days.

Senator Thurmond and members of the committee, I am grateful for the opportunity today to address the vital environmental interests of the State of South Carolina in the restart of the L-reactor at the Savannah River plant. As attorney general and, therefore, chief legal officer of the State of South Carolina, I will set forth in my testimony today the State's legal interests as they relate to the environmental consequences of restarting the reactor. Those interest were set out, in part, in a resolution of a multistate agency task force and I have submitted that resolution to the committee for his information. I believe that that resolution involves some four or five State agencies which went on public record of favoring the EIS in the situation.

I should point out at the outset that there is now litigation pending between the State of South Carolina and the U.S. Department of Energy concerning the restart of the L-reactor. In that lawsuit, we seek simply an environmental impact statement. To clarify that situation, it has been reported and inferred that the suit deals with other issues, such as State issues. The suit does not. The suit simply seeks compliance by the DOE with Federal statutory regulations. Because of the ongoing litigation, I am precluded from publicly discussing matters related to the case other than to quote or make reference to public records.

The restart of the L-reactor poses three immediate environmental concerns to the State of South Carolina. First, the reactor, as it is now designed, will discharge extremely hot reactor cooling water into a wetland stream which is a part of the Savannah River system. This engineering feature is intended apparently to use a stream and a substantial area of marshland as a natural heat sink to cool the reactor effluent. The environmental consequences are that plants and animals in this 1,0000 acre area would be destroyed and that a natural watercourse of the State of South Carolina would be seriously degraded. There are, however, design alternatives that would eliminate this problem and that would comply more closely with Federal environmental policy.

The second concern of the State of South Carolina in the restart of the L-reactor is, that a quantity of radioactive cesium-137 will be washed into the Savannah River and from there into the water supply downstream from the reactor. Reports on the significance of the cesium are conflicting Nonetheless, there are also design alternatives for the reactor that would tend to reduce any threat to the environment from this source. This concern should be more fully addressed before the reactor is allowed to restart.

The third concern of the State of South Carolina, with the startup of this reactor, relates to an inadequate containment system to prevent or minimize the accidental release of radioactive gases from the reactor. I am aware of arguments as to why containment domes are not generally used in production of nuclear reactors such as the L-reactor. However, in light of the concentration of production nuclear reactors in the State of South Carolina, and in light of the legitimate concern that the people of the State have over the possibility of accidental discharge of radioactivity into the environment, this matter warrants further attention by those who would operate such facilities in this State.

These are some of our immediate environmental concerns with the restart of the L-reactor. I wish to say that I am grateful for the opportunity of appearing, to express these to the committee. I would hope that our vital need for clean water, clean air, and an environment free of radioactive contamination not be forgotten in the pursuit of other national policy objectives at the Savannah River plant. Our suit seeks only one result and that is, we seek to have a Federal court direct the DOE to comply with Federal law. That is the goal of the suit.

Senator Thurmond, Senator Mattingly, thank you very much for your attention.

Senator **THURMOND**. We thank you very much for your appearance and your statements here and I'll call on Senator Mattingly.

Senator **MATTINGLY**. I just have one question for either of you. You called for the full environmental impact statement as a means of restoring public confidence. This is certainly an understandable argument for EIS. I wonder if the State of South Carolina has questions of its own about the safety of this restart?

Mr. **REID**. Should we both have an opportunity to respond to that there are a number. As described by the representatives of the Environmental Protection Agency, Federal and State laws administered by State agencies relating to water and air conditions, purposeful or accidental, we are always concerned when there is a facility that has a potential, no matter how possible or probable that potential is, with the effects on public health and safety in the quality of our environment. A nuclear reactor for the production of power does pose intense concern by most of those in the United States today and so my best answer to that is, yes, we have concerns additional to the thermal, additional to the cesium-137. Many of those were outlined by the testimony by the officials from EPA saying that we have other considerations to make within especially the Department of Health and Environmental Control.

Senator **MATTINGLY**. Thank you.

Senator **THURMOND**. Are there any other statements you wish to make?

Mr. **MEDLOCK**. Senator Thurmond, my answer conforms with Mr. Reid's answer on that.

Senator **MATTINGLY**. Thank you.

Senator **THURMOND**. Thank you very much, gentlemen, for your appearance. Our next witness is from the office of the Governor of Georgia, Governor Harris, and I believe Mr. James L. Setser is here. While we're waiting for Mr. Setser, I want to say to the students of North Augusta High School that we're very pleased to have you attend these hearings; and any other students that wish to come any time of the day, we're glad to have them.

You may proceed now, Mr. Setser.

Mr. **SETSER**. Thank you, Mr. Chairman. My name is James L. Setser. I am here representing Governor Harris, for the purpose of this hearing. My statement will be brief on behalf of Georgia, and it will consist of reading a letter from Governor Harris to you, Senator, with a particularly attached previous letter from the previous Governor Busbee.

[Reading]. "Dear Senator Thurmond: This will acknowledge receipt of your letter of January 11, 1983, in which you were kind enough to invite us to participate in the upcoming public hearing in North Augusta, S.C., on February 9, 1983. I want to express my apprecriation for your time and effort in conducting the hearing on issues related to the Department of Energy's Savannah River plant so that concerned Georgia and South Carolina citizens can provide input to the Committee on Armed Services.

"Whereas I am personally interested in the hearing process and its outcome, my schedule will not permit me to attend. Since the Georgia Radiation Control Act provides that the Environmental Protection Division of the Department of Energy Resources shall represent the State at hearings which involve nuclear facilities, I have designated Mr. James L. Setser of that Agency to represent me at the hearing in North Augusta.

"As you may know I, as well as former Governors Jimmy Carter and George Busbee, have notified officials of the Department of Energy on a number of occasions about our concerns regarding Savannah River plant operations. Copies of this correspondence which describe Georgia's policy positions are being provided to you for inclusion in the printed hearing record. These policy positions are generally summarized in the following paragraphs.

"First, the State of Georgia has been concerned for some time about the potential storage or disposal of high level nuclear wastes in the bedrock at the Savannah River plant. Because of the potential for contaminating the ground water that serves the southeastern part of our State, we are unalterably opposed to the disposal of such wastes in any form in the bedrock of the Savannah River reservation.

"Second, we continue to emphasize that the Department of Energy should, with the assistance of other Federal agencies, identify and submit for public review the cumulative effects of all the present and proposed facilities at the Savannah River plant. This study should also consider contiguous commercially operated and proposed facilities which come under the statutory authority of the U.S. Nuclear Regulatory Commission.

"Third, we view the specific L-reactor issue as a matter between the Department of Energy and the State of South Carolina. In this respect, Georgia supports South Carolina's efforts to insure the protection of the ground water and the Savannah River in the vicinity of the Savannah River plant.

"In closing, please accept my best wishes for a successful dialog on February 9 and I look forward to learning of the committee's conclusion in this important matter.

"With kindest regards, I remain, Sincerely Joe Frank Harris."

Senator THURMOND. Thank you very much and please convey our best wishes to the Governor for sending you here today and presenting his statement.

Any questions, Senator Mattingly?

Senator MATTINGLY. In the letter from Governor Harris, in the second paragraph, it said, "Third, we view the specific L-reactor issue as a matter between the Department of Energy and the State of South Carolina." I would not have taken any position on the health and safety of the L-reactor specifically itself, but its impact on Georgia mainly.

Thank you very much. That's all the questions I have, Senator Thurmond.

Senator THURMOND. Thank you very much. Thank you for your appearance.

We now come to the office of Senator Hollings and also the office of Senator Nunn, if you representatives would come around.

Ms. Stirling, I believe you are a representative of Senator Hollings?

Ms. STIRLING. Yes, sir.

Senator THURMOND. And Mr. Punaro is representing Senator Nunn. I believe you all just have brief statements. Do you want to summarize those.

Ms. STIRLING. Yes, sir, thank you very much, Mr. Chairman. Senator Hollings has asked that this statement be entered in the record and he wanted simply the following points to be made. He requested on the 7th of December in 1982, in a letter to Secretary of Energy Hodel, that a full EIS be done on this question since there are too many questions which people who are experts in the field are not in agreement on in terms of some of the public health aspects of the restart of the L-reactor.

In addition, he would like entered in the record today a request to the Department of Energy for region IV, of the Fish and Wildlife Service, comments on whether or not an EIS is in fact required and when the Department of Energy provides those comments, he would appreciate it if you would also enter those comments in the record. And also a letter to Mr. Jeter of region IV, EPA, just like to make one small comment. I think we ought to throw in Georgia since the Savannah River flows down through there and we are concerned about the drinking water in that area. So I have deep concern about Georgia in that respect.

Your studies have turned up tritium in the water and milk of South Georgia. Do the levels concern you and do you anticipate major increases due to the restart of the L-reactor?

Mr. SETSER. In answer to your question, sir, as I believe Mr. Reid pointed out previously, we in Georgia are always concerned about any levels of manmade materials which would have an impact on the health and safety of Georgia citizens, so we are concerned about anything that impacts on their health and safety there. It is a question of cumulative impacts and that's why we have urged a look at not only this particular action, but the other additional proposed actions beyond the reactor startup as a subject for cumulative study.

Senator MATTINGLY. OK. Have your questions about the safety of the restart of this reactor been adequately answered by the assessments done to date by the Federal Government and by DOE's answers to followup letters by Governor Busbee and others?

Mr. SETSER. Our position specifically, you know, is that we've accepted data and the information, and we do look to the State of

South Carolina under their regulatory jurisdiction in this area. Yes, I guess, you know, we have requesting copies of the background and technical documents which were used in preparation for today's testimony by EPA. He feels that there may in fact be relevant material in these documents which would directly bear on the question of whether a full EIS is advisable under the circumstances. We will enter the remainder of our statement in the record. Thank you, sir.

Senator THURMOND. Thank you very much and please convey to Senator Hollings our appreciation for sending you here today to represent him.

Ms. STIRLING. We appreciate the opportunity to be here, sir.

Senator THURMOND. Now, Mr. Punaro, we'll hear from you as representing Senator Nunn.

Mr. PUNARO. Thank you, Mr. Chairman. I'll just read several very brief paragraphs from Senator Nunn's statement. "* * * The effects of the L-reactor's operation are a matter of considerable concern to me and to the citizens of Georgia as well as our friends in South Carolina. I support the efforts of the Senate Armed Services Committee, of which I am a member, to examine in detail the consequences of this proposal. I believe there should be a thorough and comprehensive examination of the environmental and health aspects * * *" and all of the outstanding questions answered prior to any final decision on the startup.

"The proposal to restart the L-reactor is an attempt to meet certain specific defense requirements of this Nation. The citizens of Georgia and South Carolina, who have contributed so much to U.S. defense efforts throughout our history, have always recognized what is involved in maintaining a sound defense posture.

"At the same time, however, this defense posture must be built on a firm foundation of public support and understanding. The Georgia and South Carolina communities which are affected have a right to know about the L-reactor's impact on their areas and to be involved in the decisionmaking process. The communities surrounding the Savannah River plant and along the Savannah River have raised legitimate questions regarding the environmental consequences and health effects resulting from the reactor's discharge.

"Today's hearing is a needed first step in addressing these questions. I have very confidence that the citizens of Georgia and South Carolina and State, local and Federal officials will approach this decision with careful thought and cooperation. There is ample precedent that our national security requirements and our environmental concerns can be met simultaneously without adversely affecting either. The Navy's establishment of the strategic submarine base in King's Bay, Ga., is an example with which I was personally involved. The Navy worked closely with environmental concerns to mitigate the base's impact on the area.

"I will be following the L-reactor proposal attentively at all stages with a goal toward meeting our legitimate national security requirements while insuring appropriate environmental and health safeguards."

Thank you, Mr. Chairman.

Senator **Thurmond**. I want to thank you very much and please convey to Senator Nunn our appreciation for sending you here to represent him today and presenting this statement.

Now, we'll ask the Representatives of Congress, Congressman Hartnett, Congressman Thomas, and Congressman Barnard if they would come around at this time. I believe Mr. Robert Lighthart is representing Congressman Hartnett. Is that right?

Mr. **Lighthart**. Yes, sir.

Senator **Thurmond**. Just have a seat. Mr. Robert Hurt is representing Congressman Thomas?

Mr. **Hurt**. Yes, sir.

Senator **Thurmond**. And Mr. Ted Hammock is representing Congressman Barnard. We would be very pleased to hear from you at this time.

Mr. **Lighthart**. Thank you, Mr. Chairman. I'm Robert Lighthart, special assistant to Congressman Tom Hartnett of the First District of South Carolina. My purpose for being here today is twofold. First of all, I bring the regrets of the Congressman. He regrets that his duties in Washington would not allow him to be here with us in person today. He wishes the people of South Carolina to know that his concern on the matter we discuss here today is as great as that of any South Carolinians. In that respect, he wrote to the Director of the Environmental Protection Agency, Anne Gorsuch, and her answering letter to him, Senator Thurmond, is identical to the letter which you highlighted a moment ago, and I understand that letter will become, in its entirety, a part of the minutes of this proceeding. With that in mind then, I waive any further time that the Congressman might have had, and just thanks for the opportunity to be heard here today.

Senator **Thurmond**. Please relay to Congressman Hartnett our appreciation for sending you here to present this statement.

Mr. **Lighthart**. Thank you, sir.

Senator **Thurmond**. Next we'll be pleased to hear from Mr. Hurt.

Mr. **Hurt**. Thank you, Mr. Chairman. I am Robert Hurt, administrative assistant to Congressman Lindsay Thomas, who has the privilege of representing the First Congressional District of Georgia. Mr. Thomas very much regrets that he cannot be here today due to the opening sessions of both of his committees in Congress.

I would like to briefly summarize Mr. Thomas' statement by saying that he certainly expresses his thanks to you, Mr. Chairman, and to Senator Mattingly and, of course, to Senator Nunn, for your interest in this very important issue. Mr. Thomas, in his statement, affirms the vital role of the Savannah River plant to our national defense. With regard to the L-reactor, he states that he supports taking all steps necessary to protect the health and safety of our citizens. Under no circumstances should the Savannah River plant be assigned a defense mission which runs the risk of contamination of our air or water by nuclear waste or nuclear accident. The responsibility to show that the L-reactor presents no danger to public health involves in part the Department of Energy requirements. The Department should be required to prove to the affected State governments that the L-reactor is safe, and the States should apply the same reasonable standards of evaluation of the Department's proposal as they would apply to any applicant. Accordingly, Mr. Thomas supports an environmental impact statement or equivalent review if the State of Georgia determines that such action is necessary to demonstrate that the L-reactor presents no danger to Georgia citizens.

Mr. Chairman, the concluding portion of Mr. Thomas' statement relates to an issue which he believes is perhaps of more compelling safety-related issues than the L-reactor itself. As we have heard today from those officials of the South Carolina government and the State government of Georgia, there is no long-range plan for the cumulative effect of nuclear facilities within the Savannah River Basin.

The Savannah River Basin includes four major facilities that have an impact on the environment with regard to radioactive material, but despite this concentration of nuclear-related facilities in a relatively small area, neither the States nor the Federal Government has a comprehensive system of evaluating these cumulative impacts.

Mr. Thomas proposes that a Federal-State task force from the Savannah River Basin be established to include the Nuclear Regulatory Commission, the Department of Energy, the Environmental Protection Agency, in the States of Georgia and South Carolina. The task force could be created and its authority defined either by law or through Executive order from the President.

It would be the responsibility of this task force, Mr. Chairman, to evaluate the long-term plans for all nuclear facilities in the area and to determine if those plans are compatible with the health and safety of our citizens. Essentially, what this mechanism would do, Mr. Chairman, would make all of the parties sit down together and exchange information. I believe we can see from the testimony today that that information exchange has not taken place to the degree that some of the Department of Energy officials believe has been sufficient.

Thank you very much.

Senator **THURMOND**. Mr. Hurt, I want to thank you for coming and representing Congressman Thomas. Please convey to him our appreciation for sending you here and for presenting your statement.

Mr. **HURT**. Thank you, Mr. Chairman.

Senator **THURMOND**. Mr. Hammock, we are glad to have you, and you may proceed.

Mr. **HAMMOCK**. Thank you, Mr. Chairman. Mr. Chairman, as you know, Congressman Barnard represents the 10th Congressional District of Georgia, which is directly across the river from the Savannah River plant. As the Congressman from that district, he commends you for your interest in the plant and for your inquiry into its impact on both the economy and the environment of this area.

It is imperative that our citizens be given an opportunity to state their views in a hearing such as this. There has been considerable publicity related to the restart of the L-reactor. While Congressman Barnard can appreciate the concern of the State of South Carolina with the L-reactor, he is assured that the restart of the L-reactor in and of itself does not constitute a significant impact on the environment.

Much information has been gathered on the Savannah River plant. Du Pont has done a model job of keeping records, the University of Georgia operates an ecology lab, and the Department of Energy had done four environmental impact statements and three environment assessments on various aspects of the Savannah River plant.

Congressman Barnard is of the opinion that the Department of Energy and Du Pont are now using the most current technological advances to insure against radioactive waste seepage.

He urges, however, that this be a continuing commitment, and that no effort be spared in guaranteeing that radioactive waste will be stored only under the most stringent safety conditions, and he would agree with Congressman Thomas and strongly urge the Department of Energy and the Nuclear Regulatory Commission to be diligent in reviewing the total, cumulative impact of all nuclear developments in the Savannah River Basin, including the Savannah River plant itself. The long-range development of the basin, both civilian and military, must be carefully monitored to insure that any cumulative effect is virtually immeasurable.

The Savannah River Basin is more than a location for Savannah River plant. It is a vital regional resource. We owe it to the citizens of this region to insure their safety and to help them express and have answered their concerns.

The technical points could be debated for years. But the most important question is whether an adequate process exists to assure that all information has been gathered, public health and safety has been protected, and public concerns have been addressed. Those who are accountable for such questions have thus far shown an openness and a willingness to respond to the legitimate concerns of the public.

Mr. Chairman, Congressman Barnard is keeping an open mind in this matter, and I am here today primarily to listen to the testimony on both sides and to report to him my objective reaction to these statements.

Thank you very much.

Senator THURMOND. Thank you very much, Mr. Hammock. I want to thank you for your presence and please convey to Congressman Barnard our appreciation for sending you to present this statement. He is the Congressman for the 10th District in Georgia and Congressman Derrick is the Congressman for the Third District in South Carolina, and I'm glad that Congressman Derrick could be here today and glad that Congressman Barnard has sent you here to represent him.

Mr. HAMMOCK. Thank you very much, it was my pleasure.

Senator THURMOND. Now, we're going to take a 10-minute break.

[Whereupon, at 2:15 p.m., the committee recessed. The committee reconvened at 2:25 p.m.]

Senator THURMOND. We will now proceed with the hearing. We are going to alternate now between those who oppose and those who support the restart of the L-reactor. We have a panel here of three who are opposed to the restart of the L-reactor, Ms. Betty Spence, Dr. Judith Gordon, and Mr. Michael Lowe. If you three will come to the witness table. We hope you will be brief. You can put your statement in the record, but if you could summarize it, it would save time, and we would appreciate it. Now, who wants to speak first?

Ms. **Spence**. I will do so. I am Betty Spence.

Senator **Thurmond**. We are glad to hear from you, Ms. Spence.

Ms. **Spence**. Thank you. I represent the South Carolina Wildlife Federation, which has some 6,000 members in the State. Our objective is to promote the wise use of natural resources, and we are glad to be here today.

We have reviewed the August 1982 environmental assessment. The assessment makes it quite clear that the major factor of the proposed action is speed. The Federation does not wish to delay unduly any action necessary for national defense, nor are we expressing opposition to the startup. We do have questions concerning water quality, application of laws, degradation of wetlands, public health, and possible alternative methods of cooling waters. We believe the public interest would be best served and public confidence best insured if all State and Federal environmental laws were followed, if the process was subject to greater public review, and if alternatives were examined with a more positive attitude.

Resumption of the L-reactor operation must be viewed as a new activity. Present day technology and proposed modifications of the reactor necessitate this. The entire spectrum of environmental laws passed since the reactor was shut down calls for this. The comparison baseline for impacts should not be the situation which existed during the former operation. The intensity of impacts should be measured by comparing the natural, healthy ecosystem, without the operation, to the anticipated ecosystem once the operation is operational—the reactor is operational. We believe these impacts are significant and need careful scrutiny.

The Federation strongly believes that the State's water quality laws and regulations, particularly the NPDES laws, should apply. We have endorsed recent recommendations of the Governor's Water Law Review Committee that stress that "water be held subject to a public trust to the ends that under the police and public trust powers of the State that * * * the conservation and management of waters within the State be effectuated without degradation of the resource or risk to health, safety or environment now and in the future." We endorse the right of South Carolina to protect the waters of the State, including surface and ground water of SRP.

We realize that the President may exempt SRP from State jurisdiction on a yearly basis if he determines it to be in the paramount national interest. We sincerely hope this will not be done and that the President will recognize the importance of State and Federal Governments working together on a cooperative, open basis to assure the public health and safety and the environmental quality of the area.

The proposed thermal discharge violates South Carolina's water classification standards which says our waters shall "be free from high temperature * * * which interferes with water uses, or which is harmful to human, animal, plant or aquatic life." The U.S. Water Pollution Control Act recognizes that effluent limitations for thermal discharges are to "assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on the body of water." The assessment states that the effluent will eliminate most of the biota of the main channel from the L-reactor outfall downstream to the delta. For purposes of NPDES, the L-reactor and all other discharges under review on SRP lands must be viewed as a point source discharge at the point of discharge origin, not at the Savannah River.

Since Steel Creek, its delta area and the swamp are within the confines of a Federal area and are neither used by nor accessible to the general public, since they are not major streams, but represent only a small portion of SRP and State waters, some would argue that it would be appropriate to designate the highest use of these waters for cooling purposes. They also argue that the action will not destroy all wildlife habitat in the area, only modify the area for a different type of usage by both man and wildlife. They also argue that changes would provide an opportunity for further study and data collection. While these are considerations, a decision to endorse them should not be made in haste. There is a question whether continued use of the creek and swamp as a cooling stream will be successful over time. An October 1981, SRP ecology lab report notes speculation that increased defoliation in the swamp due to thermal effluent may jeopardize the area's capability to cool waters to levels that meet required standards at the Savannah River.

More importantly, designation of Steel Creek and the swamp for the purpose of cooling would set an unfortunate precedent under current law. The real question is one of values and of principles. We believe there is an intrinsic value in the natural integrity of a body of water, and in the life the water supports. We believe there is a large responsibility on the part of a technologically bold society to be stewards of the natural system and to recognize that incremental destruction of these systems, bit by bit, does contribute to the degradation of the whole. Let me be clear that we do not advocate not using our natural resources. To the contrary, we promote their wise use. We question, though, a designation of these waters for cooling is the wisest use or if there are not reasonable alternatives which avoid potential damage.

The question of public health and safety is an important one and is of concern. The resuspension of radiocesium has raised questions by the general public which the Federal Government must address fully and adequately. The safety of the Savannah River as a source of public water supply must be protected, and public confidence in such protection must be assured. The present assessment does not do this.

Perhaps less obvious, but no less important, is the influence of SRP operations on ground water. The assessment does not give sufficient information on the potential hazards to ground water, particularly from seepage basins. Even though it acknowledges that "potential contamination of the water table aquifer and neighboring surface water systems from the operation of the L-reactor will result from the migration of contaminants from the seepage basin," it dismisses the danger by saying the contaminants move horizontally for the most part. SRP is experiencing problems with ground water quality at this time. Since ground water contamination has ramifications far beyond the boundaries of SRP in terms of space and time, it is extremely important that resource protection is well documented and implemented. This is not the current situation.

I question EPA's contention today that ground water impact or contamination can be mitigated.

In summary, the Federation supports the application of current law and standards of the proposed action. We support open review of the action and public participation in the decisionmaking process.

Thank you.

Senator THURMOND. Thank you very much, Ms. Spence.

We will now be pleased to hear from Dr. Gordon. Dr. Gordon, are you speaking for the Sierra Club in Georgia or just in South Carolina?

Dr. GORDON. I am speaking for both the South Carolina Chapter of the Sierra Club and the Georgia Chapter of the Sierra Club has requested permission that I speak for them also.

There are many salient points that have been made this afternoon by concerned individuals concerning the safety of the L-reactor restart and the environmental hazards. The Sierra Club would like to focus on two of these aspects—one of them considering the impact of the L-reactor restart on the wetlands associated with the Steel Creek area, and the other concerning the attitude that is apparently prevalent in the surrounding communities in South Carolina; namely, that to oppose the restart of the reactor is, more or less, the next thing to being anti-American.

I will begin by pointing out some things dealing with the Steel Creek basin. Some of the data used in the environmental assessment are derived from two reports on the Steel Creek Ecosystem done by the Savannah River Ecology Lab—this is in association with the University of Georgia. These data covered summer 1981 to early spring 1982. I have read these reports, and it is my judgment that the environmental assessment does not always adequately reflect the contents of these two reports.

No. 1, with respect to the restart of the L-reactor, the ecology lab reports make the following statement: "The Steel Creek stream corridor and floodlands must be considered to be a sacrifice zone for virtually all higher life forms." This is with the resumption of the L-reactor activity. The environmental assessment does not include this statement; and, in fact, it is written in such a way as to make the environmental effects seem far less drastic.

Point two, the ecology lab reports further state that "additional studies are needed to determine the effect of wetlands degradation on migratory fish species."

Point three, the ecology lab reports state that "spring studies are needed to determine just how important the wetlands area may be to Savannah River productivity." It has already been established that Upper Three Runs, an area upstream from Steel Creek, is very important to fish productivity in the Savannah River; and it may be true that the Steel Creek basin may be equally important.

Four, in the environmental assessment the average bioaccumulation factor for radiation in twenty species of fish from Steel Creek is listed as 2,019. This is cited in the ecology lab reports. If you read the reports, however, they emphasize an average bioaccumulation factor of three thousand; and then caution that for larger game fish, such as large-mouth bass, the bioaccumulation factor reaches 6,000. This is not included in the environmental assessment. It is obvious that the public is not going to be fishing in Steel Creek, but these data may have relevance for estimating bioaccumulation in the Savannah River itself.

Five, in the ecology lab reports there is an indication that the Steel Creek wetlands might possibly be important habitat for the wood stork, a bird species threatened in South Carolina and currently under status review by the U.S. Fish and Wildlife Service. Loss of suitable habitat is the most dangerous threat to the wood stork. And I documented this with an article that I've attached to this report. Since this area does provide suitable habitat for the wood stork and since other suitable areas are declining, it appears to me that Steel Creek wetlands should be conserved from this standpoint. In the environmental assessment, it is merely noted that "no critical habitat as designated by the U.S. Fish and Wildlife Service is on the Savannah River plant." I think an EIS might clarify this situation. Certainly, there seems to be a conflict in the information there.

With respect to employment aspects, there have been resolutions and statements passed by local government bodies and local organizations that claim that there is overwhelming support in the area for restart of the L-reactor. I think such statements should be viewed in light of the current economic situation. For example, with respect to some of these statements:

No. 1, of those who unanimously passed the North Augusta city council endorsement, only two do not work at the Savannah River plant.

No. 2, people who live in this area suffer what I call a kind of nuclear blackmail; that is, since Savannah River plant brings jobs into the area, no one should ask any critical questions. It is considered, more or less, un-American if you are opposed to the activities that are going on there. It doesn't make any difference that there may be health hazards and that there are a lot of unanswered ecological questions associated with the activity at the Savannah River plant.

No. 3, if this job logic is followed to its obvious conclusion, a defense facility could never be terminated because people would lose jobs, which, of course, does not make any sense.

No. 4, should the Reagan administration be successful in negotiating a nuclear arms freeze or weapons reduction—and I think that most of us would hope that that is possible—some nuclear facilities are going to have to be phased out. I think that the important question we should be asking is what the Department of Energy is doing in the event of such a situation and are they going to retrain people and try to relocate personnel? Or, do we have to go on making bombs just because someone might lose their job.

Some of the L-reactor problems would be lessened by installation devices, such as cooling towers and other such things that are outlined in appendix B of the environmental assessment. DOE has chosen to reject such alternatives because they are either too costly or would require too much time to implement. Again, it appears that the economic considerations have become more important than safety and ecological considerations. Actually, you can take a rather bizarre look at this job situation that we see on the part of many local residents and officials by pointing out that the building of many of these safety devices, such as cooling towers, would indeed provide jobs in this area.

The committee, in 1981, expressed some doubts as to the ability of the aging reactors at the Savannah River plant to operate safely and efficiently in the coming years. The General Accounting Office has criticized the Department of Energy for taking insufficient action to assure that older reactors are meeting current safety standards, and I am including here the quote that supports that.

There is clearly sufficient evidence supporting the need for an EIS. Citizens on both sides of the Savannah River are entitled to nothing less than that. If the Department of Energy hopes to restore some measure of public confidence in its actions, then a properly conducted preparation of an EIS should be forthcoming. It is hoped that this committee will support such action.

And since I have a little time left, I would like to respond to some statements that I heard earlier, stating that there is an absolute necessity for the tritium and plutonium that would be produced by the L-reactor. I would like to suggest that this is the position that is taken by the Reagan administration and that does not necessarily make it true.

Thank you for this opportunity.

Senator THURMOND. Thank you.

Next is Mr. Michael Lowe. We have about 50 or 60 witnesses here. I think we are going to try and save time—the individuals have 1 minute perhaps, and organizations may take 2 minutes.

Could you summarize your statement, and your whole statement will go into the record.

Mr. LOWE. Yes, sir. I will be happy to summarize my statement.

Senator Thurmond and Senator Mattingly, my name is Michael F. Lowe; and I am director of the Palmetto Alliance. Palmetto Alliance is a statewide, nonprofit organization incorporated to promote public awareness of energy issues affecting South Carolina, particularly the difficult problems with nuclear waste.

Although our organization does participate in litigation, we are not a party in the L-reactor suit. We support the positions outlined by plaintiffs in the case, and we trust our State officials and local environmentalists to protect our legal interests.

I thank you for the opportunity to present our views today, and we will limit our comments to production of the L-reactor and nuclear wastes.

Operation of the L-reactor will add to the burden of both high- and low-level radioactive wastes already being dispersed in the atmosphere, temporarily stored or buried in South Carolina. Radioactive nuclides classified as low level will be released as gaseous or liquid effluents at the reactor site. Solid low level radioactive wastes from the L-reactor are to be buried in the Savannah plant burial ground. High level radioactive wastes will be produced as a result of processing irradiated targets from the L-reactor operations. Radioactive waste, particularly placed in Steel Creek from the previous operation of the L-reactor, will be flushed into the State's river system.

Senator, it is unfair, unjust, and unwise to ask South Carolinians to tolerate more radioactive waste in our State. For 30 years our soil, our air, our water, and our families have absorbed radioactive waste produced at the Savannah River plant.

Many people in the State have benefited economically, but for the majority, the unanswered questions are beginning to outweigh those benefits. Questions about health risks, questions about the safety implications of living near a nuclear waste dump, about the image of the State as the world's nuclear waste dump and its ability to attract tourists and industry. These doubts are reflected in the legal stand our State government has taken.

South Carolina has long served this Nation well by hosting the Savannah River plant. The time has come for the Federal Government to reciprocate and begin cleaning up the radioactive waste that has been in temporary storage for three decades. South Carolinians should see these millions of gallons of liquid high level nuclear waste solidified and removed for permanent disposal before the Federal Government creates more.

Further, it is unconscionable for the deputy plant manager to suggest that the waste solidification facility may be in jeopardy because of the opposition to the L-reactor restart. Must South Carolina submit to blackmail to gain the cooperation of the Federal Government?

We applaud the actions of the State in this case, and see this as the beginning of the end of years of exploitation of our State's good will. Governor Riley accurately senses the mood in this State when he said, "South Carolina will no longer be the path of least resistance," or as I've heard many of my farmer friends say, "Enough is enough, and more than enough is too much."

Thank you, sir.

Senator **THURMOND**. Thank you all for coming and testifying. We appreciate your presence.

Now, we are going to take some who are in favor of the restart of L-reactor. Dr. W. P. Bebbington. Is Dr. Bebbington here?

Dr. **BEBBINGTON**. Yes, sir.

Senator **THURMOND**. Dr. Bebbington, I wish we had more time but we are going to have to stick to 1 minute. If you could just summarize quickly.

Dr. **BEBBINGTON**. Yes, sir.

Senator **THURMOND**. And then your prepared statement will go into the record.

Dr. **BEBBINGTON**. Yes, sir, I will try very hard. I have already bobtailed it once, and I am going to bobtail it extemporaneously once again.

I need to say, however, that I am a chemical engineer and live in Aiken, S.C. Eight years ago I retired from Du Pont at the Savannah River plant, and then for the preceding 12 years I was in charge of direct technical assistance to plant operations, a responsibility that included environmental monitoring and radiological health protection. I am not now an employee of or consultant to Du Pont, any governmental agency or any segment of the nuclear industry. In presenting this statement I represent no organization.

I will indicate these in passing—I was going to refer to them specifically—this just happens to be the stack of reports that deal with this L-reactor question, some dating back to 1972, that I have in my personal possession as a result of my personal interests. Last December, Senator Hollings and some South Carolina State government officials announced that they would seek an environmental impact statement on the resumption of operation of the L-reactor. I wrote letters to them with a copy to Governor Riley, calling attention to the wealth of information already available, and stating my belief that another formal statement would entail an unnecessary and unproductive expenditure of time and money. Senator Hollings replied, "The information you cite is interesting and valuable. I was not aware of it before, most of that information has not been disseminated widely or subject to public scrutiny." South Carolina Senator Alex Sanders wrote, "I will try to keep an open mind on the matter and will review further the determinations of Dr. Patrick and her staff which you called to my attention. I will also review the final EIS which you mentioned." That was the old EIS on waste management which has all of this information in it. It seems to me inexcusable that public officials who profess great concern about matters such as this do not inform themselves thoroughly before making judgments and taking actions.

The people who are responsible for the spending of public funds at the Savannah River plant are on the horns of a dilemma. They must decide how much of the taxpayers' money it is prudent to spend to protect them and to inform the public. In this instance, the easy way would have been to accede to the demand for an environmental impact statement and spend the necessary additional money and technical effort to get the job done with the least possible delay. I believe their decision not to prepare the statement was proper.

For guidance in matters such as this, I strongly recommend two general principles enunciated by the Advisory Committee on the Biological Effects of Ionizing Radiation of the Division of Medical Sciences/National Academy of Science and National Research Council in their 1972 report. The principles derived from consideration of radiation, but they pertain equally well to other risks: "No exposure to ionizing radiation should be permitted without the expectation of a commensurate benefit. The public must be protected from radiation but not to the extent that the degree of protection provided results in the substitution of a worse hazard for the radiation avoided. Additionally"—and I should like everyone to listen to this—"Additionally, there should not be attempted the reduction of small risks even further at the costs of large sums of money that spent otherwise would clearly produce greater benefit."

The money and time that would be needed to prepare the environmental impact statement for L-reactor could clearly be put to better use.

Thank you very much.

Senator THURMOND. Dr. Bebbington, I believe you were a member of the South Carolina Nuclear Advisory Committee, were you?

Dr. BEBBINGTON. This is correct, sir.

Senator THURMOND. Are you still on that committee?

Dr. **Bebbington**. No, sir. I resigned, sir.

Senator **Thurmond**. Why did you resign?

Dr. **Bebbington**. Largely because of just the sort of thing that I mentioned in connection with Senator Hollings and State Senator Sanders. I objected to the fact that the government of South Carolina was not going to the experts for their information, but were completely ignoring them. The Governor never did call on our Nuclear Advisory Council for advice on such matters, for instance, as the nuclear startup; and I submit to you that when the Governor sent representatives here today, he did not send the head of his Department of Health and Environmental Control, nor the Executive Director of the Nuclear Advisory Council, nor the Chairman of the Nuclear Advisory Council.

Senator **Thurmond**. Thank you very much for your appearance. Our next witness in favor of restart of the L-reactor is Dr. Ruth Patrick.

Dr. Patrick, I want to take the time just to go over your credentials. I believe you are a member of the Philadelphia Academy of Natural Sciences, and you are an eminently qualified scientist, an environmentalist, and an limnologist, and have honorary degrees from how many universities?

Dr. **Patrick**. Seventeen.

Senator **Thurmond**. Seventeen universities, a graduate of Coker College, University of Virginia. You have served in the past on the board of the Du Pont Corp. for several years——

Dr. **Patrick**. Six years.

Senator **Thurmond**. You are not connected now with Du Pont in any way?

Dr. **Patrick**. No, not in any way, nor was I when I first started these studies in 1951.

Senator **Thurmond**. As I understand, you are representing the Academy of Natural Sciences here today.

Dr. **Patrick**. That is correct.

Senator **Thurmond**. You may proceed.

Dr. **Patrick**. May I take more than 2 minutes? I'll go as fast as I can.

Senator **Thurmond**. Yes, but try to be as brief as you can.

Dr. **Patrick**. Well, I think my studies represent the most thorough studies that have ever been done on any river in the United States.

They started in 1951 at the request of Mr. Crawford Greenewalt who was then president of the Du Pont Co. In those days there was no requirement for impact statements, but Mr. Greenewalt wanted to know the condition on health of the Savannah River before they started operations so that they would know if any of their activities were deleterious to the health of the aquatic life or the chemical characteristics of the river. These studies continue today, and they represent the longest, most complete set of river biological data in the United States, and probably in the world.

I wanted to show you these slides to emphasize my point. These studies were based upon theories developed by Dr. Eugene Odum of the University of Georgia, myself and my colleagues at the academy. They were based on the basis that high diversity of species are necessary for the transfer of nutrients through the aquatic system and that the efficient transfer or cycling of nutrients is necessary to maintain the health of the river. This study was done by a team of scientists, chemists—35 characteristics of the river have been continually monitored; 6 bacteriological characteristics of the river have been continually monitored; many biologists, algae people, protozoologists, insect people, specialists on worms and mollusks, and fish people have made these continual studies. Four stations have been continually studied. One is above the plantsite, three is below the Four Mile Creek, five is below Penn and Steel Creek, six is below Lower Three Runs or below the plantsite. These studies—these intensive studies have been made in the spring during high reproductive periods and during low flow, high temperature conditions in late summer. They are done at 4-year intervals. Every quarter of every year an entomologist and a specialist of a group of aquatic life enters the river to determine the changes.

A continuous monitoring system was established in 1953, based upon diatoms which are very important food for aquatic organisms. Indeed they are the most important algae food for aquatic organisms. It is well established in the literature that the diet shift in the population from diatoms to green algae to blue-green algae occurs if higher than natural temperatures exist in a river. These organisms are also very sensitive to increased nutrients or toxins. This is well established in the literature.

Now, many things have happened in the Savannah River since our studies started. Clark Hill and Hartwell Dams have been built, dredging and revetments have been placed in the river and the pollution sources have increased. These various changes have affected the river and are so reported. If I may quickly show you five slides, I would like to do so. May I do that?

Senator THURMOND. All right.

Dr. PATRICK. Five slides very quickly. (See enclosure 19 for slides). First, let's look at the temperature slide. You will see here that the first four surveys were before Clark Hill. You will notice that L-reactor, P-reactor and R-reactor started during the time of our fifth survey, the R-reactor closed down during our ninth—before our ninth—after the ninth survey, that L-reactor closed down in February of 1968 between our eleventh and twelfth surveys. You will see from there that we did see some difference in temperature between station one and stations three and five and six when both "R" and L-reactor were up. There was a little difference when just "L" was operating; and since "L" has closed down, there has been practically no difference in the temperatures of these various stations.

Now, let's look at the algae. Next slide, please.

The algae, as you see, are the main food of aquatic life. We will see that in the beginning before Clark Hill Dam there was great fluctuation in the algae. We find that after the survey, the sixth survey which was in 1956—1955, we see a general pattern that stays the same. L-reactor closed down after the eleventh survey. We then see a decrease in the diatom species. We wondered why. We expected them to go up.

Next slide. We see from the next slide that the chlorides increased during this period and that they increased above the plant, as you will see by the little triangles.

Let's go to the next slide. The protozoa have shown irregularness before Clark Hill Dam went into operation. The protozoa fauna then became quite similar above and below the plantsite and within the plantsite area. We see a high increase during the last two surveys. This was mainly due to an increase in flagellates and ciliates which often happens when nutrients increase in the water.

The next slide shows the effect on the molluscs, the clams, and the snails. We see, again, a very irregular pattern before Clark Hill and immediately after Clark Hill formation. We then see that it starts to, more or less, level out. There tends to be a few more species of clams in the river during L-reactor's operation than afterwards, but these are not, I do believe, significant.

Next slide please. When we examine the insects, we see, again, erratic conditions before the Clark Hill Dam was built. We then see the insect population settling down. Usually, station one has fewer or less diversity than stations downstream. The area where the plant might operate might affect the insects.

Let's look at the next slide. From this slide, again, we see that before Clark Hill Dam, the fish were not as good. We see that after the Clark Hill Dam was in place, during L-reactor operations, that the fish were highly diverse, that usually station one above the plant had a few less than those downstream, that there was no difference after L-reactor was closed down after eleven.

From these studies, I think it is clearly evident—and these studies represent extremely good baseline, impact studies because they show the conditions before the L-reactor went up for any operation, during it and afterwards; and there seems to have been no significant effect on the aquatic life in the river due to the L-reactor.

Thank you, sir.

Senator THURMOND. Thank you very much. I'll now ask Dr. William J. Westerkam to come to the witness table.

Dr. WESTERKAM. Thank you, Senator Thurmond and Senator Mattingly. I am happy to be here to represent the pediatricians of South Carolina.

Senator THURMOND. Your position is a social responsibility, is that correct?

Dr. WESTERKAM. Yes, sir.

This is a statement that I would like to read on behalf of the South Carolina pediatricians, what they have prepared and what they have submitted for this public hearing. We believe it addresses the major resource in our State, namely, our children, and it addresses the major risks of environmental contamination which leads to ill health in South Carolina.

The South Carolina Chapter of the American Academy of Pediatrics represents the interests of all people in South Carolina. As a chapter of the American Academy of Pediatricians, we are charged with and have endorsed national objections and priorities for children's health. One of these major goals of the academy is the promotion and protection of children's health needs and rights within the United States.

In the spirit and intent of national health planning, the American Academy of Pediatrics has established ten primary health goals to serve our children's needs. Within these ten goals are the following two pertinent objectives which are firmly supported by

South Carolina pediatricians: One, all children should live in a safe environment; and two, all children should live in an environment that is as free as possible from contaminants.

In August 1982, the South Carolina Chapter discussed this State's essential position on radiation exposure through nuclear reactors and nuclear wastes. The following statement was adopted for our initial response to these concerns:

> As physicians charged with the responsibility of health care for children in our State, we are concerned about the immediate and long-range hazards of nuclear wastes and nuclear reactors. We offer our medical expertise and interests to governmental representatives making vital decisions on nuclear activity in South Carolina. We urge our representatives to exercise extreme care and caution in reaching these decisions, and to keep our chapter informed of the deliberative process for future decisions on nuclear activities so that we can participate appropriately as interested citizens and professionals.

At this point in time, South Carolina's pediatricians have not been asked by the Government to be an official part of the imminent decisions on the L-reactor in our State. As health experts involved in assuring the health of children and trained in the biologic processes of illness and health, we believe this is an unfortunate oversight. Nevertheless, we welcome this opportunity today to present this statement.

Many speakers will and have stated that the L-reactor issue is a moral, economic, and/or political issue. As pediatricians, we believe it can be all these, but is primarily, and preeminently, a biologic and health issue.

The effects of radiation on human beings and all forms of organic life represent unique and devastating environmental hazards unlike any other environmental hazard because of radiation's universal effects on all forms of life, its fundamental risk to our genetic heritage, and its biological persistence in our environment beyond centuries of time.

Children are uniquely threatened by this form of environmental hazard. Their vulnerability occurs because of their biologic immaturity, their sensitivity of cellular elements, and the potential for long periods of exposure amounting to three and four times the potential exposures of present adults.

The L-reactor could establish another source of toxic radiation in South Carolina and pose a potential environmental risk—hazard to adults and children. Under normal operations, radioactive cesium will be discharged into our waters, as is well known. The South Carolina children exposed to these radioactive particles will absorb an increased amount of unnecessary radiation which could acutely affect some of their organic substance and chronically expose them to repeated risks of organic change. The risk of an abnormal operation is even more threatening in that tremendous amounts of radiation can be released into our air and water because of the unfortunate structural status of the present reactor.

The South Carolina Chapter of the American Academy of Pediatrics concludes that the establishment of further radiation hazards in South Carolina is not in the biologic or health interests of our children. We believe this fact is apparent by available evidence on the effects of radiation and our children's vulnerability. However, if other priorities are now thought to outweigh this primary consideration of our children's health, we firmly support the need to assess publicly these values in the form of an environmental impact statement. We believe that statement must involve South Carolina's biologic and health experts. The South Carolina Chapter of the American Academy of Pediatrics welcomes the opportunity to be a part of this evaluation if the request to not establish the L-reactor here is denied.

Senator THURMOND. Dr. Westerkam, we are pleased to have you with us. Thank you for your time.

Our next witness will be Ms. Rowe, representing Physicians for Social Responsibility of South Carolina. Do you have a prepared statement?

Ms. ROWE. Yes, sir.

Senator THURMOND. You may proceed.

Ms. ROWE. Thank you.

The Physicians for Social Responsibility's main goal is to educate the public about the health effects of nuclear weapons and nuclear war. The obvious price that the Savannah River plant pays in the making of such weapons compels us to take a strong stand against the further production of plutonium by the L-reactor. We will be limiting our statement, though, to the environmental impact of radiation.

Today it is an accepted medical fact that radiation causes cancer. According to various medical textbooks, there is no "safe" level or "threshold" below which radiation is harmless. The Environmental Protection Agency writes:

> It is generally accepted that no threshold can be assumed for health effects; due to radiation exposure; therefore, the perspective that must govern discharges of these materials to the environment is that all doses which accrue to exposed populations result in some increment of risk to these populations * * * By virtue of the long persistence of these materials these consequences may extend over many generations and, in this repect, these discharges can represent irreversible public health commitments.

The mechanism by which radiation causes cancer is not completely understood. Nevertheless, the nuclear industry and Government regulatory agencies have established what they claim to be "safe" doses for workers and the general public, drawing support from scientists who believe that there is a threshold below which low doses of ionizing radiation may in fact be harmless. Today's so-called safety standards have already been proven to be dangerously high.

For example: In a study conducted by Dr. Thomas Mancuso from 1964 to 1976, comparatively high rates of cancer were found among workers at the nuclear weapons and waste facilities in Hanford, Wash. Over a 12-year period, Dr. Mancuso found that there was a 26-percent increase in all cancers among this population. This worked out to be a 6- to 7-percent increase in radiation-related cancer deaths among Hanford workers, indicating that the disease is definitely related to radiation exposure at today's "acceptable" levels.

Why, again, is there no "safe" level of radiation? Because all it takes is one radioactive atom, one cell or one gene to initiate a cancer. So any exposure to any dose of radiation is taking a gamble with life.

An analysis of the fuel chain of nuclear power and weapons production reveals health hazards at each step, from mining to waste disposal. The Savannah River plant facilities include three operating reactors, all built without containment domes in the 1950's—and now it proposes to restart the fourth, the L-reactor, something which has never been done in the United States.

Citizens of South Carolina and Georgia are assured that all "releases" will not lead to exposure over some accepted "limits." We're told that 46 curies of cesium will be sufficiently diluted not to create a health hazard and that routine large tritum releases are nothing to worry about. How can all of these figures, claims and counterclaims, be interpreted to the public concerned about their health, their children's health, and the health of future generations? How can physicians explain to patients the risks that they face? How is it that we are supposed to understand the threat of cancer and other radiation-induced diseases when scientists are not even sure of the risk brought on by exposure to low levels of radiation?

The radiation from nuclear power and weapons production plants is not the same as radiation from any medical source such as X-rays. Radiation from the nuclear industry regularly involves release of alpha and beta particles. A medical X-ray affects a single individual, after a physician judged that the benefit to the individual exposed will outweigh the risks; a nuclear plant exposes a population to radiation daily—added to background radiation which also takes a toll—without such an individualized judgment.

It is known in the medical field that some populations are more susceptible to the risks of radiation exposure, including infants and pregnant women, and yet radiation released from a nuclear plant spares no one.

Lastly, we come to the fact that most individuals choose to seek a physician's advice, and they also choose to follow or not to follow the physican's recommendation for an X-ray. Has anyone chosen to expose themselves to radiation from the Savannah River plant? Do people downstream from the plant choose to consume fish with concentrate cesium, for example, up to 3,000 times the amount that is found in the water?

It is certain that an environmental impact statement will not give a final answer to all of the unresolved questions about radiation. But it does not serve the public interest well to dismiss such questions as unimportant, as has been done by the Department of Energy officials. We, the public who will be affected by this restart of an old reactor, deserve better.

Thank you.

Senator THURMOND. Once again, I want to thank you, Ms. Rowe, for your presence here and the statement you have given us.

Senator Tommy Moore, is he here? Have a seat, senator.

Mr. MOORE. Thank you.

Senator THURMOND. Senator, what counties do you represent?

Mr. MOORE. Aiken, Barnwell, Bamberg, Edgefield, and Lexington. Four members of the State senate represent the full five counties.

Senator THURMOND. I see. All right, you may proceed.

Mr. MOORE. Senator Thurmond, Senator Mattingly, and first saying welcome to Aiken County.

As a resident of Aiken County, first I would personally like to say thank you for taking the time to hear our discussions concerning the L-reactor. Too often many of us are guilty of hastily deciding our position on a particular issue, without devoting the necessary time and effort to study the facts.

I am here today as chairman of the Aiken County legislative delegation, representing our four senators and six house members.

Senator THURMOND. Are you speaking individually or for your whole legislative delegation?

Mr. MOORE. The statement that I am submitting to you, Senator, is a statement on the position of the Aiken County legislative delegation, all ten members.

Senator THURMOND. All right, you may proceed.

Mr. MOORE. In the light of the fact that you have so many people waiting to talk, I won't read that statement in its entirety, but basically——

Senator THURMOND. We will put it in the record, but you can just tell us the gist of it.

Mr. MOORE. All right. The Aiken County legislative delegation requests that the various governmental offices and agencies are urged to reach prompt agreement so that the restart of the L-reactor will not be delayed beyond the scheduled date.

I personally feel that the environmental impact assessment adequately provides the evidence necessary to determine that the affects upon human health and safety are negative and, contrary to what many believe, other members of the South Carolina General Assembly share this opinion.

To say that we favor providing for the health and safety of South Carolinians is a foregone conclusion. However, we're just as protective when it comes to the economic health and welfare of South Carolinians.

The members of the general assembly appreciate the opportunity to—you have your staff here to take all of our facts and figures and it's up to you, I guess, to make the time and effort to make a reasonable decision, but certainly the people of this area have benefited by you being here, Senator.

Thank you.

Senator THURMOND. Let me ask you. Is most of the opposition to this L-reactor coming from this area, or is it coming from outside this area?

Mr. MOORE. Well, certainly in this area, there are those members of various groups who are considered, I suppose, antirestart of the L-reactor, but I think, basically, as far as members of the general assembly and the input that we have received is by and large favorable to the restart of the L-reactor.

Senator THURMOND. Senator Mattingly, do you have any questions?

Senator MATTINGLY. No questions. Thank you.

Senator THURMOND. Thank you very much.

Mr. Carroll Warner, Mr. Edward Richardson, Mr. Charlie Lybrand, if you will come around. Mr. Warner, I believe you are chairman of the Aiken County Council, Mr. Richardson of the

Barnwell County Council and Mr. Lybrand of the Edgefield County Council. We will be pleased to hear from you now. We'll put your prepared statements in the record.

Mr. WARNER. Senator Thurmond, Senator Mattingly, a cordial welcome from the Aiken County Council.

Senator MATTINGLY. Thank you.

Mr. WARNER. As duly elected officials of Aiken County, of course, the safety of our citizens is of primary concern and rightly so, our children and wives and all those affected.

We have had the opportunity to tour the Savannah River plant, we've observed the safety precautions, we've observed the monitoring, and we see no lasting damages or effects to our environment.

I guess the punch-line for us is we have confidence, we have faith in the ability of the Department of Energy and the management of the Savannah River plant to operate this reactor in such a manner as it will not increase the effects on our environment or endanger the safety of our citizens. Because of our strong feelings on this matter, Aiken County Council joins the delegation in passing a unanimous resolution and an unanimous vote in Aiken County. That's about as far as you can get, is an unanimous vote in the South Carolina Senate. Simply, we ask the same thing, that the various governmental offices and agencies be urged to reach prompt agreement and the restart of the L-reactor will not be delayed beyond the scheduled date. I guess the punchline is: Let's get the act together and get the show on the way, sir.

Thank you, sir.

Senator THURMOND. Thank you, Mr. Warner, we are pleased to have you with us and to get your expression of an unanimous Aiken council, I believe you said.

Mr. WARNER. Yes, sir, this is the unanimous feeling of the Aiken County delegation.

Senator THURMOND. We are pleased to now hear from Mr. Richardson of Barnwell County.

Mr. RICHARDSON. Mr. Chairman, Senator Mattingly, I come here today to speak in support of the restart of the L-reactor at the Savannah River plant. The technical aspect of this project will be left to others since I am not qualified in this field.

I am a life-long resident of Barnwell County and have been on the county council for some 16 years. I remember very well the original announcement of this project coming to our area. It was received with both excitement and enthusiasm by some and apprehension by others. Very few people really knew what to expect; however, over the years a great number of our relatives and friends obtained employment in this plant and it also brought others to our area.

With their safety record and no unusual incidents occurring over the years, the great majority of the people in our area have accepted this plant and have the utmost confidence in the many safeguards that have been taken to insure that our people and the environment are protected. I feel confident that the restarting of the L-reactor at this time will be given very thorough consideration from every viewpoint, including the protection of the people and also the protection of the environment. From the experience that I have had with this plant, if they thought it would not be possible to do this they would oppose the restarting of this reactor.

I hope that you will give your support of this project as it is needed for the strengthening and betterment of our country.

I also have with me today Mr. Jim Benson, superintendent of our schools, to show his support. If you have any questions, he'll be glad to answer them.

Senator **THURMOND**. Who is he?

Mr. **RICHARDSON**. He's superintendent of schools.

Senator **THURMOND**. Schools in Barnwell?

Mr. **RICHARDSON**. Yes, sir.

Senator **THURMOND**. Is he indorsing this?

Mr. **RICHARDSON**. Yes, sir, that's why he came with me.

Senator **THURMOND**. Is your council unanimously endorsing it?

Mr. **RICHARDSON**. Yes, sir, we have submitted a resolution unanimously from our council endorsing the restarting of this L-reactor. There is one thing, sir. I do feel that it is time, in fact probably past time, that Congress take the necessary action for the permanent disposal of the high level waste at the Savannah River plant, as it is a problem that is certainly not going away and the sooner the decision is made, the better off we'll all be.

Thank you very much.

Senator **THURMOND**. Thank you.

Mr. Lybrand, we'll be glad to hear from you. You are chairman of the Edgefield County Council, aren't you, Mr. Lybrand?

Mr. **LYBRAND**. Yes sir.

Senator **THURMOND**. Go ahead, Mr. Lybrand.

Mr. **LYBRAND**. Senator Thurmond, Senator Mattingly, I appreciate the opportunity to be with you today.

I have very few words to say because my cohorts have expressed the feeling of Edgefield County.

We passed a resolution unanimously, and I would like to present for the record, the resolution of the town of Johnston, submitted by Mayor Edwards, and also the town of Edgefield, submitted by Mayor McKie, and the town of Trenton, submitted by Mayor Musgrave. They were unable to attend today and I have the resolutions with me.

Senator **THURMOND**. In other words, you're representing——

Mr. **LYBRAND**. The entire county.

Senator **THURMOND**. The unanimous county council at Edgefield and all three of the mayors in the county?

Mr. **LYBRAND**. Correct, sir.

Senator **THURMOND**. And they all endorse this project or is there any dissension?

Mr. **LYBRAND**. No, sir, they all endorse it wholeheartedly, sir.

Senator **THURMOND**. Do you have any questions, Senator Mattingly?

Senator **MATTINGLY**. I have no questions.

Senator **THURMOND**. Well, thank you, gentlemen, for your appearance.

Now, we will take the League of Women Voters, Dr. Tsagos, Ms. Virginia Brown, Dr. Kelly and Ms. Geraldine LeMay. You all have seats there. Now, if you'll just introduce yourselves when you talk for the record.

Dr. KELLY. Senator, with your indulgence, we would like to change the order of appearance.

Senator THURMOND. That would be all right.

Dr. KELLY. Thank you. I am Dr. Mary Kelly, vice-president and natural resources coordinator for the League of Women Voters of South Carolina. We thank you for the opportunity to offer this testimony today.

The League of Women Voters is a volunteer citizens organization with almost 1,000 members in South Carolina working on local leagues throughout the State. We are committed to an open governmental system that is representative, accountable and responsive to all citizens.

In South Carolina, the league has an ongoing study and informational effort on nuclear matters because we recognize the barriers to participation that exist when complex technical matters must be considered and the result, these members have a relatively high understanding of the issues involved in the L-reactor restart.

We think DOE should prepare an environmental impact statement because we share Senator Mattingly's opinion, and that of others here today, that the present study is inadequate. A comprehensive EIS needs to be prepared, addressing "all current and projected Government and private nuclear facilities" in the area. Knowledgeable South Carolinians have long been concerned that the Savannah River plant was sited back in the fifties, not because the area is most environmentally suitable but because it presented the path of least political resistance. As citizen understanding has grown, so have concerns about the location of such a facility in an area of high rainfall, on top of a major aquifer affecting a multistate area, in a class 3 seismic zone, and on a river used by many South Carolina and Georgia towns as a drinking water source.

Because the Savannah River plant was built before passage of the National Environmental Policy Act in 1969, no comprehensive environmental study has ever been done for any of the reactors at SRP or the facility as a whole, and I agree that many studies have been done, but we're talking about a comprehensive environmental study. We contend that rebuilding the L-reactor is a major Federal action and as such, Federal law requires preparation of such a statement. Not only do impacts on the physical environment need to be addressed but impacts on human health and safety.

The major importance of an EIS, in our opinion, is that there will be opinions from outside sources. State agencies and outside groups should be able to obtain and review relevant data independently and have a dutiful input into the decision-making process. There is valid and serious criticism on the part of the Environmental Ecology Institute, among others, concerning lack of access to data necessary for base line epidemiological studies on Savannah River plant workers and the population of surrounding areas. In South Carolina, the second leading cause of death is cancer. The cancer death rate is increasing at an alarming rate. In the United States as a whole, the age-adjusted death rate, according to information released by the Governor's office, is 3.1 percent. For South Carolina the age-adjusted cancer death rate is 9.2 percent, and that figure, which I don't have with me, is even worse if you compare the age-adjusted cancer death rate for white citizens versus black citizens. The black citizen rate is much higher. Is it any wonder citizens want the health impact of the Savannah River plant and the nuclear facilities in the area examined in depth? A comprehensive epidemiological study is long overdue, with input and review by agencies and individuals who cannot be accused of conflict of interest. It is unacceptable for DOE, as contractor for Savannah River, to also act as the public health agency doing and evaluating the epidemiological study.

You heard from Dr. Patrick all the information about the fish life in the river and the biological life. We think human beings also deserve a comprehensive study.

We share the concerns of the League of Women Voters of Georgia and of others over the effects of the generation of large volumes of superheated water on the ecosystem, and I won't enumerate the various other points because that will be done here.

The fact that reactors which produce defense materials do not have to meet the more stringent standards set by the Nuclear Regulatory Commission for commercial reactors provides the reason for not doing an EIS but not the justification. We in South Carolina and Georgia should expect to receive the fullest measure of protection from our Federal Government.

We know that major new facilities are planned even beyond the L-reactor as the Nation proceeds with its defense buildup. But again, no major, comprehensive study addressing health and safety and other environmental questions has ever been done for the reactors at Savannah River, so we join with all these other groups and individuals in asking that an environmental impact statement be prepared and we thank you for this opportunity.

Senator **Thurmond**. We thank you for your presentation here today.

You may proceed.

Dr. **Tsagos**. Thank you. I am a member of the League of Women Voters of northern Beaufort County, and hold the position of energy chair.

Senator **Thurmond**. Would you state your name, please?

Dr. **Tsagos**. I'm Zoe G. Tsagos, sir.

We thank you for the opportunity to present this testimony. Because of our concern about what the impact may be, both on the water quality and the environment of a reactivated L-reactor in the Savannah River plant according to present plans, we have joined with other organizations and governments in the suit brought by the Natural Resources Defense Council against the Department of Energy. We feel that, before more costs are incurred in the rehabilitation of the reactor, it is necessary that an environmental impact statement be prepared. We agree with Senator Mattingly, and others, that the Environmental Impact study put out by DOE is inadequate.

We, who are residents of Jasper and Beaufort Counties of South Carolina, who use the Savannah River water as the source of drinking water, have a particular concern about the release of radioactive waste into the river. We wish to stress the following.

One. The proposed method of reactivating will place a nuclear reactor in operation without a protective containment dome, without cooling towers and holding pools and without the use of the most recent techniques for the solidification and retrieval of radioactive isotopes, instead of flushing them into the Savannah River. Reference is most frequently made of cesium as part of radioactive waste because we know that it is not present in the sediment of the containment pond. However, on pages 4-38 and 4-39 of the DOE environmental assessment there are lists of other radioisotopes and radionuclides that will be released into the water as well when the L-reactor is onstream. Iodine is one of the isotypes. It is my understanding that the impact of the radioactive iodine upon the thyroid resulted in thyroidectomies for children in certain areas of atomic testing.

On page 4-39 of the environmental assessment we find the following, and I'm quoting from the—it's—the whole of section four is "environmental consequences." This is 4-39. "The total body dose to the population within 80 kilometers of the Savannah River plant from liquid effluents from the L-reactor support facilities was calculated to be about 0.1 millirem per year." Now, I'm not a scientist, but I believe that's equivalent to a roentgen, or a X-ray dose. "The thyroid dose was also about 0.1 millirem per year." Again I'm quoting. "The total body dose to the Port Wentworth and Beaufort-Jasper populations, about 70,000 people, from drinking Savannah River water was calculated to be about 1.3 millirem per year; the maximum organ dose to this population was 2.5 millirem per year to the thyroid." That is a considerable difference. Obviously, we cannot be comfortable with the differential indicated by these statistics.

Two. The impact upon the environment of the releasing of radioactive waste can become cumulative and have much wider range of contamination than presently indicated.

This contamination of the physical environment may come about by radical changes in the ecosystem, as radioactive waste becomes embedded in the sediment and accumulates in the river. This can be compared to what is happening in the Chesapeake Bay, in which, because of toxic waste which has been draining into the water, the life cycle in the ecosystem is being destroyed and the water is growing less able to sustain living organisms.

Three. The National Environmental Policy Act of 1969 calls for an EIS whenever a significant impact upon the environment will be made by Federal atomic installations. Therefore, the nonissuance of an EIS, we feel, is in violation of Federal legislation. From what has already been stated, we consider that the reactivating of the L-reactor under the present plan will indeed have a significant impact upon the natural environment and upon the lives of the 70,000 users of the Savannah River for drinking water.

In conclusion, we take the position that an EIS, with citizen input, as well as that of expert opinion, would help to answer some of the questions in the minds of people concerned in South Carolina and Georgia. Furthermore, a safer activated reactor may well be the outcome of this wider consideration and study.

On behalf of my group, the League of Women Voters of northern Beaufort County, I do thank you, sir.

Senator THURMOND. Thank you. I believe that we have two more witnesses; Mrs. Brown and Mrs. LeMay.

Mrs. **LeMay**. Senator Thurmond, Senator Mattingly, I am Geraldine LeMay, a member of the League of Women Voters of Savannah-Chatham County, Ga., and formely chairman of the energy committee of the Georgia League of Women Voters. I am here today at the request of Ms. Ann Curry, president of the Georgia League of Women Voters, in her behalf. I wish to state, very briefly, the position of the Georgia league on the proposed reactivation of the L-reactor at the Savannah River plant. The league's stand is that this is a major project with a probability of important environmental impact. As such, the Savannah River plant would be required by the National Environmental Policy Act to provide an Environmental Impact Statement. I do not propose to discuss the details to substantiate this stand, since Virginia Brown, the representative of the League of Women Voters of Savannah-Chatham County, Ga., will provide such information in just a moment. I am authorized by the president of the Georgia league to ask you to accept Mrs. Brown's statement as a joint one by both the State league and the local branch. I thank you very much, for arranging this public hearing on a matter which I think is of vital importance to many people in this area and I certainly appreciate the opportunity of appearing to speak with you today. Thank you.

Senator **Thurmond**. It's a pleasure having you over Mrs. LeMay. Now, Mrs. Brown, do you want to deliver your statement?

Mrs. **Brown**. Yes.

Senator **Thurmond**. All right proceed.

Mrs. **Brown**. I am Virginia Brown of the Environmental Quality Committee of the Savannah-Chatham League of Women Voters. We endorse all of the things that have been said by the other two leaguers and by the representative of the Georgia State league. It is self-evident that studies conducted under the prescribed EIS procedure would either corroborate or deny, one-by-one, the claims of future damage. In written and spoken statements before this committee, many, including several elected officials of the two States involved, are testifying to the need for an EIS. The League of Women Voters adds its voice to this group. We particularly share with Senator Mattingly's sentiments expressed in his November 16, 1982, letter to the Department of Energy Secretary. He said, in part—

> I am aware of the role of the Savannah River plant and what role it will play in this process, that is, of renewing America's defense capabilities. These concerns have not been abated by the environmental assessment. This expanded study should be comprehensive. Until the above problems are resolved, it would be absurd to start the L-reactor.

To us, in the Georgia league, it seems that there is much which indicates the possibility of serious environmental damage from the reactivation of the L-reactor and from other planned developments at the Savannah River plant. This position that I'm stating is that of the Georgia league and it is in line with the policy of the League of Women Voters of the United States. I thank you.

Senator **Thurmond**. I do thank you, Mrs. Brown. I'm glad to have you here, glad to have you and Mrs. LeMay, from across the river, come over and see your neighbors. I would thank all of you for being present and Senator Mattingly may have some questions. Senator Mattingly?

Senator **Mattingly**. I don't have any questions. I thank you jointly, Senator Thurmond.

Senator **Thurmond**. We will now hear from the big guns who are nearest to the project, that is, the mayors of the cities here. Mayor Weeks of Aiken, Mayor Ledford of North Augusta, Mayor Helms of Jackson, and Dr. Washington, who is representing, I believe, the mayor of Augusta; is that right? Come around here gentlemen, and have a seat.

Mayor **Weeks**. Senator Thurmond——

Senator **Thurmond**. Who's missing here?

Mayor **Weeks**. It appears that Mr. Helms is not here from Jackson.

Senator **Thurmond**. Can you speak for him?

Mayor **Weeks**. I will speak for him.

Senator **Thurmond**. Mayor Weeks, we're pleased to have you here. How long have you been Mayor of Aiken?

Mayor **Weeks**. Thirty-three years.

Senator **Thurmond**. Thirty-three years?

Mayor **Weeks**. Yes, sir.

Senator **Thurmond**. Well, you made a very fine record there. You happen to be the mayor of my home city and we're proud of you, and proud to have you testify. You may proceed.

Mayor **Weeks**. Thank you, Senator Thurmond. We're very proud of you and the record you have made in the United States. We're pleased to be in the presence of two such distinguished gentlemen in your position, Senator Thurmond and Senator Mattingly. First, I want to thank you for the opportunity to appear before you today representing, I feel, the overwhelming majority of the people in our area, who favor the early restart of the L-reactor.

I am Odell Weeks, mayor of the city of Aiken. I was the mayor when the first announcement was made that the Savannah River plant was to locate in this area. Except for 2 years in the mid-fifties, I have had the honor of serving the citizens of Aiken since that time and I assure you it is indeed an honor.

Why do I, along with the overwhelming majority of our council favor the early restart of the L-reactor?

First of all, we have heard from our citizenry with telephone calls and personal approach that they feel we need to get on with this restart to insure the defense of this great county in which you and I have the privilege to live and serve.

Second, we have the utmost confidence in the people that operate the Savannah River plant, the Du Pont Co., and the Department of Energy, which supervises these operations.

These people live, work, and serve among us and with us. They have been doing this for 30 years. No matter how high the monetary rewards, would you work in a location that you felt was detrimental to your health and that of your families and your friends? I'm sure your answer is no. Certainly, none of these personnel would. Nor do I believe the Du Pont Co., with its outstanding corporate image to protect, would engage in any operation that could endanger the health of its employees or the community.

The opponents say to us, you're only interested in it for the jobs that it provides and the money that it beings to the community. If I said to you that that was not a consideration, you would know that I was not being honest. I guess we could live without the Savannah River project, but it would be most difficult.

That is not my prime purpose of being here today. It is one of belief and commitment.

Belief in our elected officials in Washington and appointed people in places of leadership. These people tell us that we need to restart the L-reactor for the national defense. Belief in the Du Pont personnel and the Department of Energy personnel that have operated the Savannah River plant as one of the safest industrial operations in the Nation for 30 years. Belief in the information provided by the independent engineering consulting firm of NUS who has made a comprehensive environmental assessment that there would be no significant environmental impact by the restart of the L-reactor. I can see no benefit to be gained by delaying the restart of the L-reactor for further expenditure of taxpayers' funds and the delay of meeting the national defense needs by seeking a further environmental impact statement. Our commitment is to do whatever possible to convey to you and the Nation our positive feelings concerning the Savannah River plant, the Du Pont Co., and the Department of Energy operation.

I close with these thoughts. There's no one that lives closer to the situation than we do. There's no one that has a deeper confidence and faith in the operation at SRP than we. There is no one that has more to lose than we. We don't live in New York, California, or Japan. We are the neighbors. I submit to you, do you think I would be here today representing the people of my community, a community and its people that I love dearly, if I thought this was in any way detrimental to us. As a layman, I say to you, after personal observation and study in trying to inform myself about this matter, let's proceed on schedule with the restart of the L-reactor. Thank you, very much.

Senator **Thurmond**. We're glad to have you, Mayor Weeks. We'll now be glad to hear from the other mayors.

Mayor Ledford, do you want to speak now?

Mayor **Ledford**. Thank you, Senator. As host mayor, I would like to offer a warm welcome to you and Senator Mattingly and your staff. We commend you on your selection in choosing a good place to have this hearing and we hope you enjoy your stay here in North Augusta. We submitted to you, for record, a resolution passed by our council. It's short, so I will read it:

> Whereas, the Department of Defense and the Federal Government have determined that the restart of L-Reactor is vital to our national defense, and a major delay in restart could endanger our nation's security; and
>
> Whereas, the L-Reactor operated safely form its initial start-up in 1956 until it was shut down and placed on standby in 1968; and
>
> Whereas, the DuPont Company, in conjunction with the Department of Energy, has operated the Savannah River Plant, including three other Reactors in a safe and efficient manner, and the citizens of our area have the utmost confidence in the DuPont Company and the Department of Energy's operation of the Savannah River Plant, including the restart of L-Reactor.
>
> Now, therefore, be it resolved, that the City Council of the City of North Augusta, South Carolina, urges all agencies, both State and National, to reach a prompt agreement so that the restart of L-Reactor will not be delayed beyond the scheduled start-up date.
>
> Done and ratified this 24th day of January, 1983.

The vote in favor of passing the resolution was unanimous.

Senator **Thurmond**. Your council adopted this unanimously?

Mayor **Ledford**. Yes, sir.

Senator **Thurmond**. Is there anything else that you would care to say?

Mayor **Ledford**. No, sir.

Senator **Thurmond**. We want to thank you for your appearance here. Senator Mattingly, do you have any questions?

Senator **Mattingly**. No comments, but you have a very good school here.

Mayor **Ledford**. Thank you.

Senator **Thurmond**. Dr. Washington, we'll be glad to hear from you.

Dr. **Washington**. Thank you.

Senator **Thurmond**. As I understand you're representing the mayor of the city of Augusta?

Dr. **Washington**. The city council and the mayor.

Senator **Thurmond**. City of Augusta?

Dr. **Washington**. Of the city of Augusta, yes, sir. I assure you, sir, that it is a real honor to be here at this hearing with Senator Thurmond and Senator Mattingly. I represent the city council of the city of Augusta and they asked me to read to you a resolution that was passed January 1—I beg your pardon—January 31, 1983, as it was passed unanimously. The resolution reads:

> Whereas, the Department of Defense and the Federal Government have determined that the restart of L-Reactor is vital to our national defense and a major delay in restart could endanger our nation's security; and
>
> Whereas, the L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968; and
>
> Whereas, the Savannah River Plant has operated in a safe and efficient manner and the citizens of our area have the utmost confidence in the operation of the Savannah River Plant, including the restart of L-reactor.
>
> Now, therefore, be it resolved that the City Council of Augusta, Georgia urges all Agencies, both State and National, to reach a prompt agreement so that the restart of L-Reactor will not be delayed beyond the scheduled start-up date.
>
> Done in open Council under the Common Seal thereof, this 31st day of January 1983.

Signed by Edward M. McIntyre, mayor of Augusta, and attested to by Charles O. Phillips, clerk of council. I have this copy to leave with you, if you don't have one.

Senator **Thurmond**. All right, you can leave that with us and it will be put in the record, Dr. Washington. Are you a M.D. or Ph. D.?

Dr. **Washington**. A doctor of letters, educator.

Senator **Thurmond**. Glad to have all three of you mayors here. We thank you for your appearance.

Senator Mattingly, do you have any questions?

Senator **Mattingly**. No. Thank you very much.

Senator **Thurmond**. We will now take Dr. Thomas B. Cochran from the Natural Resources Defense Council, and Mr. Jacob Scherr. Are you with the Natural Resources Council, Mr. Scherr?

Mr. **Scherr**. Yes, sir.

Senator **Thurmond**. And, Derb Carter of the National Wildlife Federation of Raleigh, N.C. Where is Mr. Carter? Are you from Raleigh, Mr. Carter?

Mr. **Carter**. Yes, sir.

Senator THURMOND. Have a seat. We are glad to have you gentleman here. We still have a lot of witnesses, so if you could summarize your statements briefly, and we will put your prepared statements in the record?

Dr. COCHRAN. Yes, sir, we'll be happy to do that.

Senator THURMOND. Where are you from, Dr. Cochran?

Dr. COCHRAN. I'm from the Natural Resources Defense Council.

Senator THURMOND. Where is that?

Dr. COCHRAN. It's based in Washington, D.C.

Senator THURMOND. All right. And, Mr. Scherr, where are you from?

Mr. SCHERR. Sir, I'm from the Natural Resources Defense Council, as well.

Senator THURMOND. In Washington, D.C.?

Mr. SCHERR. Yes, sir.

Senator THURMOND. And you're from Raleigh, N.C.

Mr. CARTER. That's right.

Senator THURMOND. All right. You may proceed.

Dr. COCHRAN. Mr. Chairman, by way of background, I have a doctorate in physics from Vanderbilt University and a master's in physics and a bachelor's degree in electrical engineering. I've been through the Atomic Energy Commission's health physics scholarship program on radiation, also from Vanderbilt, and was on the Department of Energy's Research Advisement Board for a number of years, and I'm a member of the Regulatory Commission's Advisory Committee on the cleanup of Three Mile Island unit No. 2.

Dr. COCHRAN. We're pleased to have this opportunity to present testimony on behalf of the Natural Resources Defense Council to the committee regarding the environmental consequences of the L-reactor project. We have prepared a detailed written statement, which we request you include as a part of this hearing. I will simply summarize some of the highlights of that statement.

Our interest in the L-reactor project began last August, when we reviewed the environmental assessment released by DOE last August, at the request of concerned citizens in this region. We commend the Armed Services Committee for calling this hearing on the environmental consequences of the L-reactor project. We view this hearing as an important step forward in addressing deep citizen concern about the proposed operation of the L-reactor. In our written statement we set out the general health and environmental criteria which should be followed with regard to the L-reactor. We show that the L-reactor does not meet the same safety requirements which are imposed on commercial nuclear reactors and that its operation will result in unnecessary radiological and thermal discharges. Finally, we will discuss DOE's failure to meet its environmental responsibilities by refusing to prepare an environmental impact statement on the L-reactor project. It is our view that the decision to reactivate the L-reactor must not be based on the standards of the 1950's, but rather those of the 1980's. The L-reactor was hastily constructed and placed into operation in July 1954, following President Truman's launching of the thermonuclear weapons program, just previous to that. It was shut down 14 years later, in February 1968. For 12 years the L-reactor was essentially abandoned. Grass grew on the roof of the L-reactor building, pigeons took up residence inside, and some of the outside piping was left to rust. In October 1980, DOE began work to bring the L-reactor back to life. It appears from DOE's schedule that most of the work on the L-reactor will be devoted to repair and renovation, as opposed to capital improvements to the facility. This is the first time there has been an attempt to restore an old reactor to operating condition.

In November 1982, a Department of Energy Expert Advisory Panel recommended that the Savannah River plant be selected as the site of a new production reactor, which would be a higher power version of the L-reactor. In selecting among competing reactor concepts, the advisory panel set forth three general safety and environmental criteria which we believe should be applied as well to the restart of the L-reactor, namely: The L-reactor must meet safety and environmental standards comparable to those for commercial nuclear reactors; two, the radiation exposures and effluent discharges from the L-reactor are to be kept as low as reasonably achievable; and, three, the L-reactor must operate in a safe and environmentally responsible manner.

Now, we are concerned, first, with the issue of safety of this reactor. This reactor is a heavy water moderated reactor designed for the plutonium and tritium production larger than about one-fourth of all the commercial power plants in the country and comparable in size to the Three Mile Island unit No. 1 reactor. One could identify the various strengths and weaknesses of the various reactor types in an effort to compare the safety advantages and disadvantages. Such exercises people can do, in emphasizing the strengths or weaknesses, depending upon the philosophy about reactor safety. In any case, such an exercise, absent any methodology for weighing the merits of each characteristic, has little value and deflects attention from the real concerns regarding the safety of the reactor. The L-reactor has serious safety problems which are a result of the obsolesence of its safety systems and the criteria which the systems were designed for. The most serious safety deficiency of the L-reactor is the absence of a sealed containment structure to prevent the release of radioactive noble gases and iodine in the event of an accident. Over the last decade, not a single reactor of this size has come into operation in the United States without a containment dome. In the event of a full-core melt accident at the L-reactor, the entire inventory of some tens of millions of curries of radioactive noble gases, such as krypton-85 and xenon-133, would be released directly into the atmosphere. Du Pont's own documents reveal that the L-reactor, lacking a sealed containment structure, could not operate at this site under the existing Nuclear Regulatory Commission criteria, 10 CFR part 100. These criteria were established by the Atomic Energy Commission in the early 1960's to assess the adequacy of reactor sites and containment designs and they have been applied to over a hundred commercial reactors and various reactor sites, including the Clinch River breeder and the high temperature gas cooler reactor. I think that it is without dispute between Du Pont officials and ourselves that if the NRC criteria were applied, this methodology that is utilized by the Nuclear Regulatory Commission Staff would conclude that the site and the design of this reactor is unacceptable. The methodology has been subject to interplay between both the reactor interests of the AEC and Nuclear Regulatory Commission staff and members of the public for the past 20 years, since such criteria was first developed. So it is a fairly well recognized methodology for applying to siting criteria, as well as containment design criteria, and when we apply that to this reactor, it does not meet the minimum safety standards of the Nuclear Regulatory Commission. The safety issue, in a nutshell, is whether we are going to use the safety criteria of the Truman and Eisenhower administration in restarting this reactor, or are we going to apply the safety criteria of the 1980's.

Now, I want to turn to the issue of routine operation of this reactor. The internal documents and the background documents that are behind the environmental assessment indicate that there is a substantial contamination by cesium offsite from the Savannah River plant just downstream from where Steel Creek enters the Savannah River. The background levels of radiation offsite average about—by the DOE estimates—about twice the natural background levels and there are areas where they've measured exposure as high as five times the natural background. The Department of Energy tends to minimize these offsite contamination problems which exceed the minimum requirements that would be applied to a commercial nuclear rector by the Nuclear Regulatory Commission. It minimizes the standards by averaging an exposure dosage to all of the individuals out of 50 miles. When you average people that essentially receive no exposure with those that live very close to the site, it gives the appearance that offsite contamination is very small. I simply want to note that if the minimum routine release standards applied by the Nuclear Regulatory Commission for routine releases from a reactor were applied to this reactor, you would not have an issue with respect to the potential exposures to people downstream because you would be forced to use some alternative, what they call the prime-peak cooling approach. Those are the two principal issues that I wanted to raise. I will turn it over to Mr. Scherr for some concluding remarks.

Mr. SCHERR. Mr. Chairman, Senator Mattingly, I'll be extremely brief. I would just like to point out that this is not the first time that there has been a congressional hearing or congressional questions about the need for an environmental impact statement on the reactivation of the L-reactor. In the spring of 1980, the then Assistant Secretary of Energy for defense programs was asked by a member of the Armed Services Subcommittee of the House whether an environmental impact statement would be required for reactivation of either the L- or R-reactor at the Savannah River plant and the answer was, and I would like to quote, "An Environmental Impact Statement would be required to reactivate either the L- or R-reactor. It is anticipated that this effort would take 1 to 2 years to complete." Now, this response wasn't surprising, in light of a decade of law and practice under the National Environmental Policy Act, which requires the preparation of an environmental impact statement for any major Federal action which may significantly affect the quality of the human environment. It had been unchallenged, until now, that the operation of a nuclear reactor involves a range of severe environmental effects and the irretrievable commitment of resources. Since the passage of the National Environmental Policy Act over a decade ago, not a single nuclear reactor of the size of the L-reactor has gone into operation in the United States prior to completion of an environmental impact statement. Now, almost 3 years later, DOE still has not prepared an environmental impact statement. Instead, they have prepared what is called an environmental assessment. In our view, this assessment is nct a balanced, objective study of the environmental effects of the L-reactor operation, but rather it seeks, through irrelevent comparisons and omissions, to minimize as much as possible the effects of the operation of the L-reactor. DOE now complains that full compliance with the requirements of the National Environmental Policy Act, will delay the start-up of the L-reactor, now scheduled for October 1983. This start-up date is also employed as an excuse for not seriously considering alternatives which would make the L-reactor safer or which would reduce radiological and thermal discharges. Yet we believe that there is still ample time in which to proceed with an EIS on the L-reactor project in a manner which accommodates the interests of all the affected parties. We believe that it is in everyone's interest to see the environmental health issues, raised by the L-reactor project, resolved properly, and in accordance with the law.

Thank you very much, sir.

Senator THURMOND. Thank you, Mr. Scherr. We're glad to have all of you with us.

Senator MATTINGLY. Don't leave. I need to ask you a question please.

Mr. CARTER. Mr. Chairman, Senator Mattingly, my name is Derb Carter. I am the director of the Carolina wetlands project, which is an office of the National Wildlife Federation, in Raleigh, N.C. The National Wildlife Federation is the Nation's largest conservation organization, with 4½ million members and associates and affiliate organizations in all 50 States. The Carolina wetlands project is a regional office of the National Wildlife Federation addressing wetland loss and protection in North and South Carolina. Carolina wetlands project staff include two wetland resource specialists who have conducted field research through a broad range of wetland systems in the Southeast.

I appreciate the opportunity to testify today. I will summarize my statement for the sake of time. My comments will focus narrowly, on the determination in the environmental assessment that the destruction of a minimum of 1,000 acres of wetlands would be environmentally insignificant. We reviewed the environmental assessment prepared by the Department of Energy and found adequate documentation of the wetlands fishery and wildlife impact. We disagree, however, with the findings of no insignificant impact. The environmental assessment states that thermal discharge will immediately eliminate 250 acres of swamp forest wetlands. An additional 750 acres will be modified at a rate of 7 to 10 acres per year. Floodplain spawning of recreationally or commercially valuable fish and habitat for the endangered American alligator will be eliminated or adversely affected. Available habitat for wading birds, semiaquatic mammals, certain fish, and other species will also be eliminated. In short, the natural and functional values of a minimum of 1,000 acres of successional swamp forest wetlands will be destroyed and this loss is environmentally significant.

The summary tables in the environmental assessment is misleading. The table compares differences between pre-1968 and post-1984 L-reactor impacts. The baseline for comparison of wetlands systems effects in the table is the operational status of L-reactor pre-1968. The environmental assessment notes, however, on page S-2, that the systems have been recovering from thermal stress and have become a productive ecosystem. The baseline for comparing wetland systems impacts from the proposed startup and resulting thermal discharge should be the existing productive system. Using the existing system as a baseline would result in a more than negligible impact to wetland systems from new thermal discharge. The area, as I mentioned, to be affected by thermal discharge is undergoing ecological succession and returning to a typical swamp forest ecosystem. The functional values of these wetland systems are well documented. These wetlands are among the most productive and valuable natural system. Swamp forests provide habitat and forage foods for a wide diversity of fish and wildlife species, some of which are endangered, and spawning habitat for several species of fish. It is the ecological interrelationships of these systems with other natural systems that makes these areas particularly important. Swamp forests are coupled to downstream estuarine systems and hydrologically coupled to riverine systems. By virtue of this coupling swamp forests filter nutrients, sediment, and other pollutants from the water and provide organic detritus to downstream systems.

As an example of the functional values of these systems, which has direct implications with respect to this proposal, is research which has demonstrated that tributaries from the Savannah River have trapped and held radioactive cesium potentially reducing contamination of commercial and sports fisheries in the Savannah River. The wetlands areas to be affected by thermal discharge provide habitat to a wide diversity of wildlife. Recent surveys have identified 66 species of fish, 60 species of reptiles and amphibians, 69 species of breeding birds, and 25 species of mammals. Nests of the endangered American alligator have been located in the Steel Creek corridor. In sum, 1,000 acres of valuable wildlife habitat will be eliminated or destroyed by thermal discharge. One cannot minimize the importance of the direct loss of 1,000 acres of forested wetlands by noting that the affected area is but a certain percentage of existing floodplain wetlands. The direct loss of 1,000 acres is important when viewed in the context of cumulative national, regional, and local losses. It has been estimated that 20 percent of the wetland systems on the Savannah River plant will be eliminated by thermal discharge and approximately 23,000 acres of floodplain forests have been eliminated by construction of impoundments on the Savannah River. The public value of these wetland areas is demonstrated by the protection afforded these areas under section 404 of the Clean Water Act, Floodplain Executive Order No. 11988, and Wetlands Executive Order No. 11990. I would just like to mention that there is a project, currently, at the Military Ocean Terminal at Sunny Point near Wilmington, N.C., which will affect 20 acres of wetland. It's a dredge project to make the harbor more amenable to large ships. It's currently underway on full NEPA process and there are approximately 25 acres of wetlands affected.

In summary, it's our opinion that the direct loss of 1,000 acres of successional forested wetlands is environmentally significant. The recirculation system and cooling tower alternatives discussed in the environmental assessment were rejected based on cost and scheduling delays. These alternatives could substantially reduce or eliminate significant wetland losses and should be evaluated through NEPA process.

We appreciate the opportunity to testify. The incremental loss of the natural and functional values of wetland systems is an important public concern. We would hope that this project proceeds in a manner in which these public values are protected and maintained. Thank you.

Senator THURMOND. Thank you very much.

Congressman Derrick recommends the speed up of an EIS so it would not delay the startup of the reactor. How do you feel about that?

Mr. CARTER. Mr. Chairman, we have already indicated to the Department of Justice and Department of Energy that we would be interested in negotiating a schedule for the preparation of an EIS in order to expedite it.

Senator THURMOND. Thank you very much.

Senator MATTINGLY. Specifically, what would you want to include in the EIS that is not in the EA?

Mr. CARTER. Well, in our testimony we've identified and say this today, we feel there have been a number of areas we've identified as concerns to both citizens of the State of South Carolina and Georgia and State officials and they involve cesium discharges, impacts on wetlands, impacts of thermal discharges in the Savannah River, a question of the safety of the L-reactor, and I think we would be interested in seeing a very close look at alternatives to direct discharge of thermal waters into Steel Creek as well as alternatives that would make the L-reactor safe for such examples including containment.

Senator MATTINGLY. Thank you very much, Mr. Carter.

Mr. SCHERR. I'd like to add that we heard earlier today the Environmental Protection Agency's representatives, in effect, signing off on the Department of Energy's environmental assessment. However, they have no regulatory authority over the safety of nuclear reactors, and there's been no sort of independent assessment by the staff of the Nuclear Regulatory Commission. Going through the environmental impact statement process would require comments by the Nuclear Regulatory Commission staff on the safety aspects of this reactor.

Senator MATTINGLY. Thank you very much.

Senator THURMOND. Thank you, gentlemen, very much for your appearance here.

We will now take the chamber of commerce representatives from the cities nearest the project: North Augusta Chamber of Commerce, Mr. Lewis Wessinger; Aiken Chamber of Commerce, Mr. James Moore; and Augusta Chamber of Commerce, Mr. Stuntz. If you will just identify yourselves for the record when you speak, we'll be glad to hear from you.

Mr. **Wessinger**. Thank you, Senator Thurmond, Senator Mattingly.

Lewis Wessinger, president of the North Augusta Chamber of Commerce.

My comments will be brief. The Greater North Augusta Chamber of Commerce is directing its appeal for the startup of the L-reactor without additional environmental studies on the basis of the adequacy of the environmental assessment and on the good neighbor which the plant has been.

The early startup will add approximately 400 permanent employees and add some $10 million to the economy. This is important considering the layoff's that are occurring in other industries.

The Savannah River plant has conducted its mission in an environmentally sound manner through continued monitoring, evaluation and process improvements.

As a further objective, environmental research continues as an ongoing process. The environmental resources are professionally managed through a well planned program.

To the best of our knowledge and belief, the L-reactor presented no health hazards to the community or those in the water dispersion area in the past. Cesium-137, a by-product of the operation, is released in quantities that are negligible.

It is pointed out that other areas in our State have naturally occurring radiation much higher than will be prevalent after the startup of the L-reactor.

As the safety record of the plant indicates, it has been a good neighbor to the community. There have been no fatalities or injuries from nuclear operations or radiation exposure since the plant's startup in 1953 and its industrial record is exemplary.

The above indicates that the Savannah River plant is the type of industrial neighbor that is desired in our area.

The total economic impact to the Central Savannah River area is significant. Of the total employment at the Savannah River plant, 1,800 employees reside in the North Augusta/Beech Island/Belvedere area representing a boost in the local economy of some $60 to $70 million. The additional employment resulting from the early startup of the L-reactor will surely expand these figures.

Requiring a full environmental impact study will delay this boost to the economy that is so badly needed. The track record thus far clearly indicates that the study will only delay what has already been proven to be environmentally safe.

This chamber endorses the startup of the L-reactor without an environmental impact study.

Thank you.

Senator **Thurmond**. Thank you very much, Mr. Wessinger.

We will now be pleased to hear from the other two gentlemen.

Mr. **Moore**. Jim Moore, president of the Greater Aiken Chamber of Commerce.

As a chamber of commerce, our organization is chiefly interested in the economic conditions and the quality of life of Aiken. We represent approximately 400 businesses and industries in the Aiken area. From an economic standpoint, Savannah River plant means a great deal to Aiken. It helps to make Aiken one of the highest income per capita counties in South Carolina. The startup of L-reactor would create about 400 permanent jobs which means a great deal to our economy, which has been hit by heavy layoffs in the textile industry.

More importantly, we make our homes and raise our families in Aiken. We're concerned about the quality of life in Aiken no less than is the Savannah River plant, which is a valued and responsible industrial neighbor. Of course, it stands to reason the environmental impact of starting up the L-reactor is of significant concern. However, based on the environmental assessment that has already been performed for the Department of Energy, the adverse environmental impact, if any, is shown to be insignificant.

The following is an excerpt from a letter written on December 16, 1982, to Governor Riley from the Greater Aiken Chamber of Commerce:

> We believe that the Environmental Impact of starting up the L-reactor is truly insignificant. This position is supported by: (1) the past safe operating experience of the Savannah River Plant and the L-reactor in particular without a significant, almost indiscernible, environmental impact; (2) the present very low environmental impact of the three reactors presently operating at the Savannah River Plant; and (3) the results of the studies that are based on years and years of expertise and data in predicting and then verifying by monitoring, the dosage which the population would receive from nuclear facilities.

In reference to the process water, because of the buffer zone of swampland provided for in the plant's design, the thermal effects of the process water released from the Savannah River plant are no greater than the degree or two of temperature at the point that they enter the Savannah River.

In a year of poor economy, high unemployment and an unbalanced budget, it seems a mismanagement of funds and a poor business decision to spend several millions more of taxpayers' money and delay the startup of L-reactor for several years to do a full environmental impact study on such a low risk opportunity.

As stated in our letter to Governor Riley—

> If we were not fully convinced as to the safety and insignificant environmental impact of this operation on us, our families, and fellow citizens, we would not support and propose its early startup and operation. We sincerely believe that the startup of the L-reactor, on the basis proposed by the Department of Energy, is in the best interest of the citizens of this area and the citizens of the Lower Savannah Region, as well as the citizens of the State of South Carolina.

Thank you for allowing us to come before your Committee and state our position. Thank you.

Senator THURMOND. Thank you for your presence, Mr. Moore. We were pleased to have you here.

Now we'll be pleased to hear from Mr. Bob Stuntz, the chamber of commerce of Augusta.

Mr. STUNTZ. Thank you, Senator Thurmond, Senator Mattingly.

The Greater Augusta Chamber of Commerce, its board of directors and its membership fully endorses the proposed startup of the L-reactor at the Savannah River plant without an environmental impact study. We base this conclusion on three facets: No. 1, the national need; No. 2, the completeness of the environmental assessment and its conclusions; and, No. 3, and very important, the safety record that has been established by the Du Pont organization, not only at the Savannah River project, but worldwide in all their operations. This clearly demonstrates to us their overriding concern for their employees' welfare, the welfare of their neighbors and the environment in which they operate.

Thank you very much.

Senator **Thurmond**. Thank you very much. We're glad you all could come and express yourselves today. We thank you for taking the time to do so.

And now, Senator Mattingly, if you have any questions.

Senator **Mattingly**. Thank you very much. I do not have any.

Senator **Thurmond**. We will take a 10-minute break now.

[Whereupon, at 4:30 p.m., the committee recessed. The committee reconvened at 4:40 p.m.]

Senator **Thurmond**. Our next witness is Mr. Ed Duryea from the Beaufort-Jasper County Water Commission. Mr. Duryea, come around.

Mr. **Duryea**. Yes, sir.

Senator **Thurmond**. We are glad to have you with us.

Mr. **Duryea**. Do you want me to submit my testimony in writing?

Senator **Thurmond**. No, we want to hear from you, you feel free to go right ahead.

Mr. **Duryea**. I appreciate the opportunity. I am Ed Duryea and I'm the general manager of the Beaufort-Jasper County Water Authority. I am making this statement on behalf of our board of directors. I will summarize my statement and submit the entire statement in writing and summarize it for you as best I can.

Senator **Thurmond**. All right.

Mr. **Duryea**. The Beaufort-Jasper Water Authority was created in the early 1950's by an act of the South Carolina Legislature. Our purpose established at that time was to provide a reliable water supply, or find a reliable water supply, and furnish potable water for domestic and industrial use in and around several areas of Beaufort County which were without safe potable water at that time. We have operated our treatment plant since 1962. Our source of drawn water is the Savannah River and today we're serving approximately 50,000 people, most of whom are north of the Broad River in Beaufort County, but we do serve some people in the southern part of Beaufort County, south of the Broad River and in Jasper County. As I mentioned, the Beaufort-Jasper County Water Authority water is the only source of potable water for many of the people in our two counties, so you can see that the water is vital to our area and we certainly must maintain the quality of the Savannah River. Upon being apprised of the DOE's plans to restart the L-reactor, we employed an independent consultant to assess the impacts on our water, to review the environmental assessment and advise us on how it would affect our water in our treatment plant operation. We have also met with Department of Energy officials and have corresponded with them in some depth. I have attached two letters to my statement for the record, one from our chairman to Mr. Morgan, manager of the Savannah River plant, and Mr. Morgan's response to that letter covering several concerns that we have. Our concerns have centered around two things, the effect of cesium on our water quality and the effect of its accumulation in our canal proper and in our treatment plant sludge. Following our board's evaluation of the proposed restart of the L-reactor, the following position is being taken at this time by our board. I wish to read the position that is summarized in the written report:

It says in summary, we have no scientific basis for opposing the plan to restart the L-reactor from a water quality and treatment plant standpoint on the basis of the information that has been furnished to us. Recognizing our duty to protect our water supply, we urge the continuation of a promised program to monitor our canal and our treatment plant sludge and to keep us informed of the results. We request that the Department of Energy be required to adopt a reasonable schedule for monitoring and to adhere to that schedule. Second, we want to emphasize our desire to—we would like to have a firm commitment from the Federal Government to assist us, technically and financially, in the disposal of the sludge if this should prove to be a problem in the future due to releases from the L-reactor. The DOE, as indicated in the letter that we have attached to our statement, has offered assistance in correcting any problems that we have, but we would like to have a stronger and a firm commitment from the Federal Government to assist us in correcting any problems that should occur from the restart of the L-reactor; and, finally, we request that the use of cooling towers and the closed circuit system for cooling water be given further considerations. It's apparent from some of the information that we have read that the use of cooling towers would have several environmental advantages, and it would give us some added protection, so we're asking that be given further consideration.

That concludes my statement, and I appreciate very much the opportunity to present these statements on behalf of our board.

Senator **Thurmond**. Thank you very much. We are very glad to have you with us and are pleased to have you come and testify.

Mr. **Duryea**. Thank you, sir.

Senator **Thurmond**. Senator Mattingly, do you have any questions?

Senator **Mattingly**. No, no questions. Thank you.

Mr. **Duryea**. Thank you, sir.

Senator **Thurmond**. Next is a group of mayors: Mr. Flynn, mayor of Williston, S.C.; Mr. Moore, mayor of Snelling, S.C.; and Mr. Fickling, the mayor of Blackville, S.C. As I understand, all three of these mayors are in favor of the L-reactor. You may proceed, Mayor Flynn.

Mayor **Flynn**. Thank you, Senator Thurmond, Senator Mattingly.

We, as the citizens of the towns that are in close proximity of SRP and L-reactor, respectfully request that the committee give some concern to our opinions dealing with SRP. We, as close citizens of SRP, do not feel that DOE would recommend an unsafe project. We do not feel that Du Pont would run an unsafe project no matter how great the economic impact would be upon our towns and counties.

I would like to read a brief statement and a resolution from the town council of Williston. South Carolina, like her sister southern States, has benefited in recent years from investments in industrial plants. This has meant jobs for South Carolinians and tax revenues from the State and local communities. Almost without exception these plants have provided safe work places and have not damaged the environment or threatened anyone's health.

The Savannah River plant is an excellent example of a high quality industrial plant. Its safety record is unequaled in the State and responsible scientists have concluded that there are no health and environmental effects.

The recent publicity about SRP must make industrial managers nervous about future investment in our State. Regardless of one's views on nuclear methods, the recent statements by some state officials must be viewed as a special form of anti-industry sentiment. Just look at some of the groups involved in the crusade against the SRP, the groups these officials have apparently allied with. They do not have a long record of positive contributions like the SRP has. Do they even consider gut issues such as jobs? Nobody advocates jobs at any price. But most of us want the risk from a given plant's operation to be discussed factually by those qualified. Those of us who try to look at both sides of major issues should urge our State leaders to realize their recent statements about the Savannah River plant could have consequences few of us want. They have criticized one of the safest plants anywhere. What's the reward for such an outstanding safety environmental record? Criticism by public officials. I say a pat on the back for a job well done would be more appropriate.

I'd like to also read a resolution from the town council.

Senator THURMOND. Do you want to put that in the record?

Mayor FLYNN. Yes, sir, I think it already is.

Senator THURMOND. So the resolutions from the other town councils are also a matter of record.

Thank you very much.

Mayor FLYNN. I'd like to read the resolution.

Senator THURMOND. All right.

Mayor FLYNN [reading]. "Whereas, experience at the Savannah River plant, operated by the Du Pont Co. for the Department of Energy, indicates that nuclear reactor operations can be done safely and without significant impact to the environment, and

"Whereas, the Federal Government has indicated that prompt restart of L-reactor is necessary for our Nation's defense, and delay in the restart could have adverse effects on our national security, and

"Whereas, L-reactor operated safely for about 12 years before it was placed on standby, and

"Whereas, appropriate studies indicate that restart and operation will result in no significant environmental impact.

"Now, therefore, be it resolved, that the Williston Town Council urges concerned local, State, and Federal agencies to reach agreement and take appropriate action to permit timely startup (scheduled October 1983)."

Senator THURMOND. Mayor Fickling of Blackville, S.C., is not here, but I notice that he has written me and he sent a copy of a resolution indorsing the startup of the L-reactor, so this can go in the record, too. (See enclosure No. 39.) We understood that the mayor of Snelling would be here, but he is not.

We will move on. We have two more panels of mayors. Mayor Robert McKie of Edgefield, S.C., is he here? I saw him today, but he had to leave evidently. Now, Mayor William Holmes of Allendale, S.C., is he here?

Mr. SMITH. I am Mr. Smith. The council says that Mayor Hicks does favor the startup of the L-reactor. He has sent a letter and also a resolution. (See enclosure 40.)

Senator THURMOND. So this will go in the record in favor of starting up the reactor.

Now, Mayor Holmes, we'll be glad to hear from you.

Mayor HOLMES. Senator Thurmond——

Senator THURMOND. I want to complement you on the good job you've done down in Allendale as mayor. I know you've been in touch with me about a lot of projects. You have been working hard for your people, and we were glad to help you get a municipal building and some other things there.

You may proceed.

Mayor HOLMES. Senator Thurmond, Senator Mattingly: First of all, I would like to say to the Senator, the citizens of Allendale appreciate the assistance you have given us over the past years since I've been mayor of the town of Allendale.

As I stated, I'm the mayor of the town of Allendale. Allendale is a great town and, on behalf of the citizens of Allendale, I come before this hearing to testify in our support, our collective support, of the restart of L-reactor.

Allendale is a small rural town with a population of 4,400 people. The town of Allendale is located approximately 12 kilometers southeast of the nearest Savannah River plant boundary and approximately 18 kilometers southeast of L-reactor area. As a small rural town, agriculture is our basic and primary industry. A large percentage of our citizens depends on agriculture or related businesses for a living. Our people live very close to the soil. We are hardworking and industrious people and very proud of our way of life. We are proud of the rich heritage that we have established. We do have the utmost confidence in the ability of our Government to protect and preserve our environment in order for our children's children to inherit this rich heritage.

My confidence has been refortified by the testimony today of Dr. Patrick on her long, comprehensive, exhaustive study of the Savannah River. As you know, in the town of Allendale we feel very close to the Savannah River.

Savannah River plant has been our neighbor for over 30 years, and we have established a good relationship over that period of time. In our view, Savannah River plant operating reactors have never posed a real threat nor danger to our people and our surrounding environment. The safe operation of SRP reactors for nearly 29 years has served to refortify our trust and confidence in the ability of those men and women who work at the plant. The men and women who work at SRP are ordinary people and many of them are our friends and relatives. They are doing an extraordinary job in the area of on-the-job safety performance.

Furthermore, Savannah River plant leads the Nation, and probably the entire world, in its safety performance. SRP has not experienced a single lost workday case per 200,000 hours exposure in its operating history. This outstanding safety performance is impossible to achieve by mere luck. In our view, this outstanding safety record clearly indicates that Savannah River plant officials are committed to the safety of their workers, the general public and the environment. SRP management is equally committed in its efforts not only to minimize individual workers radiation exposure, but to the general population and surrounding environment as well. Individual radiation exposure a worker receives is well below the Federal guidelines. A typical worker at SRP receives less than one-fifth of the established Federal guidelines. Radiation released to the environment is well below those established Federal guidelines also. In our view, adequate radiation exposure safeguards are in place and are being maintained at the Savannah River plant. Continual environmental monitoring, evaluation and process improvements have contributed to SRP conducting its mission for the U.S. Government in a sound environmental manner. The Savannah River plant is the most widely monitored site in the world, environmental monitored, that is, site in the world, and the State of South Carolina, EPA and other agencies have monitored the plantsite over the operating history of the plant.

Mr. Chairman, I would like to state for the record my association with the Savannah River plant. I guess many of you here would say I may have a subjective or biased view because of my direct association with the plant, but my direct association with Savannah River plant goes back to May 1970 and has continued to the present day. I believe this experience has served only to increase my confidence in the competence of the operating organization and in its overriding commitment to protect the safety of employees, the public and their environment. Through my direct association with the Savannah River plant, I have firsthand knowledge of the outstanding safety program employed there. Through this experience, I feel it is significant that the safety history of Savannah River plant operating reactors over the past three decades justify the restart of L-reactor.

The Savannah River plant is one of the most widely, as I stated earlier, monitored sites in this country. No facts or data have been revealed through this monitoring process to indicate that the plant operation poses a danger to the public and the environment. The environmental assessment carried out at the direction of the Department of Energy affords further assurance that the reactivation of L-reactor will not have any significant environmental impact.

Mr. Chairman, the citizens of the town of Allendale have complete trust and confidence in the continuing safe operation of the Savannah River plant.

On January 27, 1983, the Allendale Town Council adopted a resolution in support of the restart of L-reactor. A copy of that resolution is hereby submitted for inclusion in the official record. (See enclosure No. 41.)

Senator THURMOND. We will put that in the record.

Mayor HOLMES. Mr. Chairman, I close with this observation. About two weeks ago a young resident of the Town of Allendale, about twelve years old, stopped me on the street. He said:

> Mayor Holmes, why are we having so much fuss about the restart of L-reactor? It seemed logical that if we got three operating reactors at the Savannah River Plant, why is just that one portion of the operating reactor calling for a problem of Government grief?

So I had no answer for him. So I think maybe the objective is not clear, to permanently stop the restart of the L-reactor, so maybe he will think they'll close the operation at Savannah River plant itself. That's all.

Senator THURMOND. Thank you very much, Mr. Mayor.

Senator MATTINGLY. Thank you very much.

Senator THURMOND. We appreciate your presence here and your testimony.

Mr. Chris Gross, Water Resources Commission of South Carolina.

Mr. GROSS. Thank you, Senator Thurmond.

On behalf of the South Carolina Water Resources Commission, I would like to express our appreciation for having the opportunity to speak here today. Senator Mattingly, we thank you for your interest in it. We have filed a written statement——

Senator THURMOND. By the way, who is the chairman now of the Water Resources?

Mr. GROSS. Mr. Lucas M. Dargan, chairman of the Water Works Commission.

Senator THURMOND. And the executive director is whom?

Mr. GROSS. Mr. Fred Bang, executive director.

We have filed a written statement with the committee. I would like to refer to the first two pages in summary and read portions of that statement now, if I may.

"In response to a request from the State Budget and Control Board, the Water Resources Commission has participated in a task force of State agencies to review the proposed reactivation of L-reactor in order to formulate a unified State position with regard to this matter. As a result of inquiry into this matter, a resolution was presented and adopted by the Commission at its meeting of December 8, 1982, which resolution states as follows:

"Resolved that the Water Resources Commission instructs its director to represent the following position at the task force of affected agencies. This position is that the Department of Energy in restarting the L-reactor should follow all the State and Federal permitting procedures including investigating the need for an environmental impact statement as if it were a private industry. The State Budget and Control Board should consider enforcing the position of this Commission by all legal means available to it including intervention in the present Federal litigation.

"This resolution was adopted by unanimous vote of the Commission."

The State attorney general, Travis Medlock, referred to the work of this task force. I would like to now reference four of the points which they made in considering the State's position:

One, is that the State of South Carolina has important legal and regulatory responsibilities with respect to the proposed reactivation of the L-reactor by the U.S. Department of Energy at the Savannah River plant;

Two, it is and should be the policy of the State and its regulatory agencies to require governmental actions affecting South Carolina's natural, human, and cultural resources to meet the same standards of environmental protection as would be required of actions by private industry or enterprise having an equivalent effect on the environment;

Three, that the State and its agencies feel that it is essential to take appropriate steps to assure that all State and Federal regulatory and permitting procedures are followed with respect to the proposed reactivation of the L-reactor; and

Four, in order to assure that the interest of South Carolina will be adequately and properly protected with respect to the proposed reactivation, the State should institute an independent legal action to assure compliance with the law by the Department of Energy.

In summary, the Water Resources Commission firmly believes that the proposed reactivation of L-reactor, along with its interrelationship with existing activities at the Savannah River plant, warrants a thorough and extensive environmental assessment, followed by a meaningful opportunity by interested governmental agencies and the public in general to review the proposed project and make comments thereon.

I ask your careful consideration of the remaining portions of this position in the written statement which deal with what we feel to be the inadequacy of the environmental assessment which warrant a more indepth study through an EIS. Thank you. I will be glad to answer any questions you have.

Senator THURMOND. Thank you very much.

Senator MATTINGLY. Thank you.

Senator THURMOND. Mr. Steven Vandervelde, South Carolina Libertarian Party, and Mr. G. Robert Kerr, Georgia Conservancy, will you gentlemen come to the witness table.

Mr. KERR. I don't believe Mr. Vandervelde is here.

My name is Robert Kerr, executive director of the Georgia Conservancy. On my right is Hans Neuhauser, my associate, coastal director of the Georgia Conservancy. I will attempt to summarize our statement very briefly.

Senator THURMOND. We'll be glad to hear from you, Mr. Kerr.

Mr. KERR. Thank you, sir.

Senator THURMOND. We will have to limit the organizations to 2 minutes and the others to 1 minute. We still have a lot of witnesses here, and we are running way behind.

Mr. KERR. I'll do my best, sir.

In the Conservancy's 16-year history, we have only found it necessary to litigate twice before, so you can see that we only litigate when we feel that we have exercised all reasonable and rational means and they have failed.

We are now presently engaged in a court action to require DOE to perform an EIS.

First, we contend that an EIS is required by statute. The National Environmental Policy Act of 1969 requires an environmental impact statement will be prepared on major Federal actions. By using several examples of what other Federal agencies consider significant, we can demonstratrate that DOE's interpretation is highly unorthodox and inappropriate.

At Kings Bay, Ga., where the U.S. Navy is constructing the east coast base for the Trident nuclear submarine, not only one but two EIS's were prepared to assess the impacts. The most significant environmental impact at Kings Bay was the destruction of 36 acres of wetlands and the Navy wrote two EIS's. The reactivation of the L-reactor will impact at least 1,000 acres of wetlands, and yet DOE sees this as insignificant.

In Savannah, the minor enlargement of a small boat marina involving less than $1 million prompted the U.S. Army Corps of Engineers to prepare an EIS. DOE refuses to prepare an EIS for a facility requiring an outlay of $214 million. As they say on the television series, Senator, that's incredible.

The safety of DOE's nuclear facilities has also been seriously questioned in a recent report of the General Accounting Office entitled "Better Oversight Needed for Safety and Health Activities at DOE's Nuclear Facilities." I quote:

> Major changes are required in the safety and health oversight program at the Department of Energy's contractor-operated nuclear facilities to insure that safety, health and environmental standards are met. This responsibility falls to the operating contractors, which are also responsible for meeting production or program objectives. As a result, safety and health concerns must often compete with program goals.

The rest of my statement, Senator, discusses reasons for an EIS and have already been brought out. It also discusses double standards by which commercial reactors are required to operate versus the intent of DOE to operate this reactor.

Senator THURMOND. Does Mr. Neuhauser have a statement?

Mr. KERR. Yes, sir, I would like now to ask Mr. Neuhauser to comment.

Mr. NEUHAUSER. Thank you, Senators.

We wish to endorse the proposal advanced by Congressman Lindsay Thomas this morning for the establishment of a joint Federal-State task force to provide oversight guidance for the overall future of the Savannah River plant region. The principal purpose of the oversight task force would be to insure the regional nuclear operations, both commercial and governmental, will be both safe and as environmentally benign as is possible.

The task force should be comprised of representatives of DOE, EPA, the Nuclear Regulatory Commission and representatives of South Carolina and Georgia and should provide for adequate opportunities for public review and comment. The proposal presented by Congressman Butler Derrick regarding an expeditious preparation of an EIS also has considerable merit, and we urge that you give it serious consideration.

Much of the technical data necessary to produce an EIS is already available, although not in the environmental assessment, and part of the necessary scoping process that would identify concerns and issues is happening here today. Therefore, we feel that an adequate EIS could be completed in a lot less time than the 18 months estimated by DOE. The cost should also be a lot less than DOE's estimate. We call on you, Senators, to expedite the production of an EIS as the most appropriate approach to addressing the unanswered questions, concerns, and particularly the alternatives that we and others have raised.

We thank Senator Mattingly for his concern here on this issue. We share those concerns.

We also thank you, Senator Thurmond, for holding these hearings. You have been far more responsive to public concerns than DOE has, and we hope that you will continue that.

We will be glad to answer any questions that you may have.

Senator **Mattingly**. Just briefly, you were referring to a task force. If DOE and EPA had done the EIS, you wouldn't be talking about a task force, would you?

Mr. **Neuhauser**. That's correct, related to the L-reactor, Senator.

Senator **Mattingly**. That's what the subject is now. Thank you.

Senator **Thurmond**. We thank you very much, gentlemen, for your appearance here.

Mr. **Neuhauser**. Thank you, sir.

Senator **Thurmond**. We have a statement here by Mr. Vandervelde, and we will put that in the record as he is not here.

Next, we will take Ms. Betty Jowers, representing the American Legion Auxiliary, Williston, S.C. Is she here? Since she is not here, we will put a statement in the record that she is not available.

Next, we will take Mr. Wilhelm, chief, Metal Workers' International Association. If you will just identify yourself and put your statement in the record, if you would like to.

Mr. **Wilhelm**. Thank you. My name is Ralph Wilhelm. I'm the legislative director of the Sheet Metal Workers' International, and we are here in support of the reactivating of the L-reactor. Our statement should be included in the record.

Senator **Thurmond**. Thank you very much. It will be included in the record.

Next is Mr. Tom Clements, Athenians for Clean Energy, and Mr. Ken Matthews, Savannah Area Chamber of Commerce. If you will come around, we will be glad to hear from you.

Mr. Clements, you may proceed.

Mr. **Clements**. Thank you. I'll just take a few seconds. I have put my comments in the record.

I just want to point out one reason why I think a full Environmental Impact Statement should be done. This is just one example that can be found in the environmental assessment. If you look through the environmental assessment, when it's talking about cesium transported into the Savannah River, on page 3–44, it talks about turbulence in the river and how sediment is deposited in the river. Before this, it is pointed out cesium is agglomerated or attached or adsorbed to particular matter. In the next to the last paragraph on that page, it talks about levels of cesium sediments upstream, but it doesn't go into the levels of cesium in sediments downstream at all, and I think this is a real oversight on the part of the environmental assessment. I think it points out that an EIS should be done.

Also, I think the no action alternative should be explored, given the talks that are going on to reduce nuclear weapons and the possibility that the House may pass a nuclear freeze in March.

Also, I would also agree, along with the State of Georgia, that a study should be done on cumulative effects to the Savannah River plant.

Thank you.

Senator **Thurmond**. We will be glad to hear from you, Mr. Matthews.

Mr. **Matthews**. Mr. Chairman, Senator Mattingly, I am Ken Matthews. I am representing the Savannah Area Chamber of Commerce, and I will give an abbreviation of our written statement.

The Savannah chamber is a business organization of over 1,300 Savannah businesses. It places primary emphasis on economic development with additional concern for the quality of life that makes Savannah attractive.

The chamber has grave concerns over the Department of Energy's plans for reactivation and expansion at the Savannah River plant. Our community is 88 miles downriver and downwind from the Savannah River plant. We fear that our air and water quality may be adversely affected by the L-reactor restart. Consequently, we believe that a full Environmental Impact Statement is in order and should take into account the cumulative effects of the present and proposed facilities at the Savannah River plant as well as other contiguous operations.

We do have a concern that there is a double standard applied to projects of the Department of Energy as compared to those by commercial utilities. Our concern is that the Department of Energy's standards are not comparable to those of the NRC, nor are they subject to the independent review of that agency.

We will continue to be opposed to bedrock storage of high-level waste due to our concern for ground water contamination in our dependence upon both ground water and surface water. Therefore, we feel a thorough Environmental Impact Statement is necessary to allay the health and public safety concerns of those that could be affected.

Thank you very much.

Senator THURMOND. Thank you.

Now we have about three or four more organizations left to testify. We will give them 2 minutes each, and then we are going to take individuals, pro and con.

We have Ms. Jean Shorthouse, Georgians Against Nuclear Energy. She is not here so we will move on to Mr. Michael Gooding, Grass Roots Organizing Workshop. And Mr. B. A. Burson, Federation for Progress.

I understand Mr. Burson is not here.

Senator THURMOND. How about Ms. Rebecca Shortland, Coastal Citizens for Clean Energy? Now, if you are representing an organization, we will give you 2 minutes. Otherwise, if you are an individual, we will give you 1 minute. We still have a lot of witnesses to hear.

Ms. SHORTHOUSE. I am Jeanne Shorthouse, and I represent Georgians for Nuclear Energy.

Senator THURMOND. If you will just briefly summarize.

Ms. SHORTHOUSE. I don't plan to read the whole statement, sir. Although it was originally understood we had 10 minutes, now I've run this down to 2. I will make it.

We have a basic mistrust for the assessment for conflict-of-interest reasons. We don't trust the DOE study done on a DOE facility. We feel that the assessment did not adequately talk about our need for more plutonium, and we understand that it gave no consideration for alternatives except the one for cooling water options. We feel there are other alternatives.

The environmental assessment does not adequately prove the need for nuclear materials, and we feel that they are not in our interest from national security. Our Government's nuclear weapons programs does not produce the security any more than it once was supposed to do. It now produces mass insecurity, and more plutonium does not lead to a nation that's secure. In conclusion, we suggest you listen to what the majority of the American people are saying. They're asking for a U.S. freeze and Soviet freeze on the production, testing and deployment of nuclear weapons and nuclear weapons systems.

Our present policy, Mr. Thurmond and Mr. Mattingly, is teaching our children that terrorism is an acceptable way to resolve problems. By your own definitions, the balance of terror has become an acceptable American and Soviet solution. We suggest you begin a civilized process of resolving problems by serious negotiations.

Our suggestions are not offered as simple ones. We are well aware of their complexity, but offered as a beginning to getting back to human values that we all can be proud of.

Our suggestion is don't start the L-reactor, cease making war nuclear materials and open up serious dialog with the Soviet Union.

Thank you.

Senator THURMOND. Thank you, Ms. Shorthouse.

Any questions, Senator?

Senator MATTINGLY. No questions.

Senator THURMOND. Our next witness is Mr. Michael Gooding, Grass Roots Organizing Workshop.

Mr. GOODING. Could I ask a question first before I start? I'd just like to ask either of the Senators if, considering the fact that this has never been done before, the reactivation of an old nuclear reactor, doesn't the uniqueness of this situation warrant that the panel look into further consideration of an Environmental Impact Statement instead of simply an environmental assessment?

Senator THURMOND. Before we answer that, we will give you all a chance to express yourselves.

Mr. GOODING. OK, I was asking that same question of all.

Senator THURMOND. You just go ahead and say anything you want.

Mr. GOODING. OK, I would like to begin my statement by making an impromptu remark about freedom of speech. Seeing that the committee has already limited the nature of our comments to the very narrow confines concerning the L-reactor, I'm reminded of a recent experience of mine and some friends after being arrested at the Savannah River plant for trespassing.

During the trial, the judge refused to allow us as defendants to say anything except that which would not damage the Government's case against us. In that case, we were threatened with 6 months in jail for contempt of court. I just hope that here today my freedom of speech will not be so severely repressed because my statement is not confined just to the environmental effects of the reactor.

Let me begin by saying that I do not feel the least bit honored to be speaking before the Senate Armed Services Committee today. To be honest, it makes me quite angry that, in the twenty-third year of my life, I have to be standing here defending my future and the world's future against the ruling class ever since the founding of the United States of America. In order to maintain control and exploit the vast majority of this Nation and the world's people, it has demonstrated a callous disregard for humanity and has now brought us to a point where we are facing total annihilation through nuclear war. The issue at hand is not simply whether the restart of the Savannah River plant's L-reactor will pose a health hazard to local residents, which it will. We have to look much deeper than this and realize that these plans to increase production of plutonium and tritium for nuclear weapons represents the continuation of a national policy that has painted a very hideous history of this country.

The L-reactor restart is a manifestation of an economic system that places profit over people, turning human beings into mere commodities to be exploited for their labor, then tossed away like junk cars when they can no longer produce at a rate fast enough to satisfy those who own the means of production.

It represents the greedy desires of a wealthy elite that is willing to brutally rape the Earth of everything it has to offer, leaving it poisoned and dying in the wake of destruction, for no other reason than to further fatten their already bloated bank accounts.

When the U.S. Government announced its plans to produce more nuclear weapons, instead of concentrating on feeding, clothing, sheltering the people, we should not be the least bit surprised. In fact, we should recognize this type of decision as a rule and not the exception. We must remember that this is the same Government that committed mass genocide against native Americans, a policy which is continued to this day on the reservations. This is the same Government that condones slavery of blacks and still——

Senator THURMOND. Wait a minute now. Are you speaking to this issue, or are you speaking against this Government?

Mr. GOODING. Yes, sir, I'm speaking——

Senator THURMOND. We don't care to hear you speak against this Government.

Mr. GOODING. I'm speaking——

Senator THURMOND. If you want to speak to this issue, we will hear you.

Mr. GOODING. I'm speaking to what the restart of the L-reactor represents. I think that we have to——

Senator THURMOND. Well, no matter what it represents now, you confine yourself to the issue. You're speaking against this Government.

Mr. GOODING. Of this Government restarting the L-reactor.

Senator THURMOND. You have to confine your statement to the question here at issue——

Mr. GOODING. My statement——

Senator THURMOND [continuing]. About the L-reactor. Speak to that or we will call in somebody else.

Mr. GOODING. My statement is all over, if I could just complete it; it's very near the end.

Senator THURMOND. Go ahead and get through as soon as you can.

Mr. GOODING. This is the same Government that brought us to World War I, the Great Depression, Hiroshima, Nagasaki, Korea, was willing to napalm children, women, and old men in Vietnam, and is now willing to support the massacre of people in Central America who are struggling to be free.

No, we should not be surprised about the plans to restart the L-reactor at SRP, and I hope that no one is surprised when, despite this hearing, the L-reactor is resurrected.

This hearing itself is nothing but an attempt to delude the people into believing they're providing input into a so-called democratic system when we should have learned by now, after 207 years of lies and deceit, that the Government, in the employ of the ruling class, is going to do whatever it pleases, no matter what the cost monetarily would be.

Senator **Thurmond**. Ms. Rebecca Shortland.

Ms. **Shortland**. Thank you. I am here on behalf of the Coastal Citizens for Clean Energy. We are a Savannah-based organization of citizens, and we are also plaintiffs in a suit which was filed against the Department of Energy on November 8, 1982. Thus, we do share our concerns to those that have been raised today, and I will not repeat them.

We also share the great concern for our water resource in the Savannah River. It is becoming increasingly clear that we will need the Savannah River as a public water supply in the future, and I would like to point out that any damage to this resource would have very strong economic as well as environmental effects.

In addition, I would just like to point out that the Savannah River plant has the potential to be the largest nuclear center in the world. With that in mind, I would like to know where else these issues have been raised before; where is the demonstrated data, for instance, in the cesium that is resuspended in the water supply; where is it; what is the data that has been presented before us today? I think we need a much stronger assurance of what we are going to be faced with.

I strongly agree with Senator Mattingly's fears for what could possibly be the result of an inadequate assessment from the Department of Energy.

I strongly urge you Senators to continue the concerns that you have expressed here today by allowing us to present our feelings, our concerns, our facts, by urging the Department of Energy to initiate an environmental impact statement immediately.

Thank you very much.

Senator **Thurmond**. Thank you very much, Ms. Shortland.

Senator **Mattingly**. I would like to make one short statement that fortunately we live in one of the few countries of the world where you can make a statement either pro or con.

Thank you.

Senator **Thurmond**. Anyone may make a statement pro or con, Senator, but the issue today at this hearing is not what the other witness was talking about. He's fortunate he lives in America as well.

Senator **Mattingly**. Right.

Senator **Thurmond**. We have three more witnesses supporting the restart of the L-reactor, Mr. Joe Wilder, Mr. Harry Peacock, Mr. W. G. Brunson. If you three would come around and if you will just take one minute, if you can possibly get by with that. We will put your statement in the record if you have it with you today.

Mr. PEACOCK. Sir, Mr. Wilder had to leave. He endorsed the program.

Senator THURMOND. Mr. Peacock, you may go ahead.

Mr. PEACOCK. Gentlemen, my name is Harry Peacock from Blackville.

I must confess I am no expert when it comes to nuclear energy, but being a member of the State development board of the second judicial circuit, I wholeheartedly endorse the L-reactor for the purpose of employment and security of our Nation's defense.

That's all I have at this particular time. Thank you.

Senator THURMOND. Thank you very much.

Mr. Peacock, I want to, incidentally, commend you for your service to The American Legion and the great service you have rendered to The American Legion. You have been very prominent in this organization for many years, an outstanding leader. Go ahead, Mr. Brunson.

Mr. BRUNSON. Mr. Chairman, Senator Mattingly, I'm a retiree from Du Pont Co. In the last 28 years I have worked very closely with the reactor department. I helped start up all five of the reactors in my stay there, and I'd like to say to you today, as far as I know, I'm in good health, and I worked for a company that was more interested in my health than they are in machinery or tools. I was in the maintenance department, maintenance supervisor, and we went in and prepared the equipment to get L-reactor back in service, and I know for a fact that they really take care of their people and if you go there to do a job, like they require you to do, it's almost impossible to get hurt or to get overcontaminated because we had back then what they call the old health psychics department. I believe it's changed in the last couple of years since my retirement, but you cannot get contaminated or hurt if you follow the instructions, and I'm real proud of the company.

Thank you.

Senator THURMOND. I thank you. Do you have any questions?

Senator MATTINGLY. No.

Senator THURMOND. Mr. Mullins McLeod, Mr. Dennis J. Hoffarth, and Ms. Beatrice Jones.

Mr. McLeod, I'm pleased to welcome you. You are an outstanding leader in the State.

Mr. McLEOD. We thank you, gentlemen, and your staffs for coming down and having these hearings. Having been a former staff member myself, I know you people have an awful lot of work to do.

I am not a scientist and even if I was, I couldn't compete with Dr. Patrick's 17 honorary degrees, but I have submitted a statement and will be brief.

I would like to point out, number one, an editorial in The News and Courier on January 26 of this year asking for public comments and says the EIS needs to be done to give public confidence to people in South Carolina.

Another editorial is also in the Columbia State. I won't read them. They are both in the record. It will show that these two newspapers—and, Senator Thurmond, I know you're well aware of them—feel this strongly about it.

I've heard a lot of testimony here. I am not here to knock Du Pont. I think they possibly do a very fine thing. They have a very fine plantsite. I think somebody summed it up nicely in, why is an EIS not necessary? Why would the Savannah River plant be exempt when the rest of the country was not? If the L-reactor is complete, why don't we have a cooling tower and other safety devices? Now, unfortunately, people are a little leery, and I remember when the Savannah River wasn't very far from Warrenburg, from Allendale and from everywhere, and people made good money, but people are a little more skeptical now and, you know, 1984 isn't far away, and I hope the big brother will not become a real thing. This Environmental Impact Statement is necessary, as the newspapers said, to soothe the concerns of the citizens, particularly of South Carolina and Georgia. I can well understand people's concern in the Aiken, Edgefield, Allendale communities regarding jobs—certainly I am, too—but we have a lot of people drinking water that do not know what the consequences will be.

Then we get down to certain things, like property value, here in South Carolina. In Hilton Head, in particular, we have condominiums that sell for a half-million, million dollars. Now, we were talking about money a while ago, which I don't normally talk about. They said it cost maybe a million or two million dollars so, without this EIS, the developers there cannot take their piece of paper and put it in the Wall Street Journal and tell the gentlemen with all the money to come on down to the good land, Hilton Head is all right. No, he's just going to move right on down the island, so property values also will have a concern.

Health values have a concern. The fishing industry has a deep concern. People want to know what is going to be the effects of it.

Now, the State of South Carolina, its Governor, its attorney general have brought a lawsuit for the DOE to prepare an EIS. DOE's representatives claim that they must get started. Well, with all the reservation they have at hand if it would take an additional 18 months, with all the information they have at hand, they're not doing their job properly or, by Joe, we better have an Environmental Impact Statement because we need to know these things, particularly in the low country of Georgia and South Carolina.

If an environmental impact statement comes back and says everything is hunky-dory, then we'll be all right. If it comes back and says it wouldn't be, well, at least the Government could then decide what to do, whether to crank it up and move us out and buy our property or—I know it wouldn't—but it would just be like giving us something. That's the things that people are concerned about. This is why the environmental impact statement is necessary. As you said earlier, we're not here to discuss nuclear weapons—or I'm not—I'm here to discuss the health and welfare and the property values and the economic conditions of particularly the low country of South Carolina and Georgia.

Thank you very much for allowing me to be here, sir.

Senator THURMOND. Thank you for appearing, Mr. McLeod.

Ms. Beatric Jones, you have a statement. You just want to put your statement in and then just briefly summarize it?

Ms. JONES. It's pretty hard for me to do. It's not real long. I've shortened it a little bit here.

Senator THURMOND. You may proceed.

Ms. JONES. Thank you.

Mr. Chairman, Senator Mattingly, and members of the panel: it is with considerable concern that I have been following news about the renovation of the old L-reactor at the Savannah River plant. A complete awareness of all facts must be brought forward, particularly those concerning the impacts of the past thirty years of operations at SRP. Such information is essential before intelligent, responsible decisions about the detrimental health and environmental effects of the fourth reactor can be assessed. No technology assessment is conducted in isolation. For these reasons a full, comprehensive Environmental Impact Statement is needed.

South Carolinians and Georgians should not be expected to take on faith any persuasion by the DOE that there are no dangers to the public at the Savannah River plant.

SRP people have downplayed the detrimental effects which would result from the startup of the L-reactor. I believe it is safe to say that there will be an increase in incidents, accidents and problems at SRP, with the additional reactor's restart.

There have already been numerous accidents at the plant during which radioactivity was released into the environment. In 1977, 479,000 curies of tritium were released in a single day. In contrast, The American Atomic Tritium facility in Tucson, Ariz., released approximately 250,000 curies of tritium in 1979, causing the State to revoke its license.

Between May 30 and June 3, 1961, the Savannah River plant released the single largest amount of radioactivity ever reported in scientific literature for a U.S. facility: 153 curies of radioiodine. Plutonium has been released in exhaust plumes. No reactor incidents or accidents are reported to the public, and the plant's safety reports are not sent to any Federal or State regulatory agencies.

There have been technical problems at the Savannah River plant. Internal safety reports revealed in 1980 indicated that incidents happened about twice a week that year. Each, and I quote, "* * * stripped away at least one layer of a reactor's envelope of safeguards, exposing workers or the public to some extra measure of radiation risk. Each had nuclear hazard potential."

Emergency diesel power has been unreliable at the plant. It failed during tests in 1978 and 1979. In addition, as much as 300,000 curies of tritium are routinely released into the atmosphere each year.

I am sure that Government recognizes that natural and medical radiation produce cancer and genetic harm in direct proportion to the dose received. The Government should also recognize that it has a moral responsibility not to deceive the public into thinking that any amount of ionizing radiation is safe.

A retired former member of the Savannah River reactor design team has explained that "The choice of cooling towers, or a once through cooling system was purely a matter of economics in the 1950's." It is evident that Government made the decision to pollute, rather than to control pollution at its source. Government agencies are often the biggest promoters of pollution activity, with little regard for the public interest. Now, years later, we know about the DOE's plans to dump large volumes of radioactive cesium-contaminated hot water into the Savannah River. Without the benefit of cooling towers, all wildlife in the wetlands will be destroyed, fish in the river will be killed, and the cesium in the water will pose a threat to the health of people who drink Savannah River water.

I don't claim to be a nuclear expert. Through reading, however, I recognize that there is a conflict between rosy pictures that SRP people paint concerning the flora and fauna in the swamps of the Savannah River plant, and the findings of scientists with the Savannah River ecology laboratory of the University of Georgia. The authors of the article, "Thermal Alteration of Aquatic Ecosystems" in the magazine the American Scientist, were coeditors of Thermal Ecology in the AEC symposium series.

The following is a small example of what the scientists discovered, and I quote: "All trees and other components of the forest community have been eliminated from approximately 560 acres of the swamp receiving the heated water from the SRP reactors. The dead trunks of the cypress trees are the only remnants of the original flora of these acres." There is much more.

I can only wonder how many (if any) Government officials and others have been shown this aspect of the problem while touring the Savannah River plant.

When SRP people argue against an EIS, they are arguing against the summary of 5 years of scientific research by numerous investigators at the University of Georgia's Savannah River ecology laboratory. I have here photographic evidence of what happens when heated water from a nuclear reactor is released without the use of cooling towers. It is immoral for Government to put a low dollar value on human and other life forms in South Carolina, while pushing additional hazardous technology where there is already too much.

If we have a rational society where the health, and welfare of citizens is paramount, constructive action is possible to protect lives, health and the environment. There should also be recognition by the DOE that the burden or proof is upon technology to prove safety, rather than the public to prove hazard.

The National Environmental Policy Act became law in 1970. The DOE is going around the spirit of the law in evading the issue of doing an EIS at the Savannah River plant. A containment dome is needed to prevent radioactivity from escaping from a reactor in case of an accident, and cooling towers for the avoidance of hot thermal discharges into the Savannah River.

NEPA set the process up, and now Government should play by its own rules.

Senator **THURMOND**. Thank you, Ms. Jones. We thank you both.

Mr. **McLEOD**. Thank you very much.

Ms. **JONES**. Thank you very much. I appreciate it.

Senator **THURMOND**. Ms. Lou Grant, is she here? H. M. Kelley, is he here?

Come around and have a seat, Ms. Grant, and Mr. Kelley.

Ms. Grant, we are very pleased to have you and you may proceed.

Ms. **GRANT**. Thank you, Senator Thurmond, we're happy to be here.

I'd like to say that my name is Lou Grant. I am not from Washington, D.C. I do not represent the Sierra Club. I'm not from any far away place. I'm from Aiken, S.C., the home of the Savannah River plant and the Honorable J. Strom Thurmond. You might call it his second home, but that's all right with us.

I would like to say I hope it's all right to comment on one of the other speeches or testimonials. I am just a Commissioner of the parks, recreation, and tourism in the State of South Carolina. I know I do not represent them here today, but we are closely associated with the Wildlife Commission of South Carolina and we're very interested in the wildlife of South Carolina, as we are in the economy of the State and everything else, and I would like to take issue with one of the speakers who seemed to imply that we who are from this area are more interested in the economy than we are anything else. I am going to have to say that, yes, I am very interested in the wildlife, as I am every facet of the State of South Carolina, but if it comes down to which is more important, people in my area, the fish and the birds and the bees, I would have to plead guilty to being more interested in the people and in the economy of this area.

I know that you are concerned with public confidence, and I believe, through the resolutions that have been sent in, that you have found that they do reflect the opinions and the desires of the people who live in this area.

We have lived here with Du Pont and with the Department of Energy for 30 years. They are not someone from Timbukto who would do anything that is hazardous to our health. They go to church with us, they pay taxes, they participate in the local government and civic affairs. We have the utmost confidence in these people. They have earned it.

I believe that we are actually down to the question of who do we believe? We've heard the pros and the cons here today. Are we to believe the Du Pont Co., the Department of Energy, who have earned their credibility; are we to believe those who might be interested in their political future or to the politics of nuclear power?

I would like to congratulate our Third Congressional District Congressman, Mr. Derrick, Senator Moore; and the other elected officials who took the time and felt that it was important enough to make a personal appearance here today. I know that many could not attend, many of our State officials, and I strongly urge that they will get the facts as presented here today and try to join hands with the Du Pont Co. and the Department of Energy. Yes, we would like to see this happen from the State House of South Carolina and even down to the man who is waiting for one of 400 jobs.

Senator THURMOND. Thank you very much, Ms. Grant. We were pleased to have you.

Senator MATTINGLY. No questions.

Senator THURMOND. Mr. Kelley, we'll be glad to hear from you.

Mr. KELLEY. I'm going to be as brief as possible. I'd like to address myself to the slides. I see they are ready now.

My name is H. M. Kelley. I live in Aiken, S.C. I worked for the Savannah River laboratory from 1953 until 1978 when I retired. Part of my work there was related to radiation dosage. You residents are involved with the cesium problem. We heard a lot about it so far, but very little data, and my point today is to put some data in the record and talk about these exposures in terms of those ratios so no fancy units get involved.

Let's look at the first slide, please. What it says is the background radiation, to which all of us are exposed, amounts to about nine millirems in the Beaufort area. Taking the previously given data of the amount of cesium in the water that would be in the taps of those people, they would get a dose of about .02 millirem in the course of a year. That's drinking the amount of water already stated. This means that the background radiation would give them a dose 4,800 times as big as a seasonal dose, which is supposed to be so bad. I think those who want to have an environmental impact statement have to show that the .02 millirem dose is significant compared to 90 million millirem dose, which they all get anyway. I say that they can't do it.

Second slide, another dose which we get routinely comes from potassium in our food. That's about 20 millirem per year on an average; that's .02 in millirems. We're talking about a factor of something like a thousand. Potassium and cesium chemically behave much the same way. That's a lot worse than you could have from cesium. Living in a brick or stone house means you'll get roughly 5 millirem a year. That is about 250 times as much dose as you got from the cesium in Beaufort water when the L-reactor was started. If you watch TV, you get a dose of about a millirem which is 50 times worse than the cesium dose.

Finally, if you elevate the foundation and floor of your house by 1 foot, you'll get just as much dose as you would get from the cesium in the Beaufort tap water. You know, you get more dosage as you go higher into the atmosphere.

Thank you very much. I appreciate the chance to speak.

Senator THURMOND. Thank you very much, Mr. Kelley. We are pleased to have you with us. We will now proceed to Dr. S. David Stoney, Jr., Mr. Feig, and Mr. Jan Laan. If you take about a minute and put your statement in the record, we would appreciate it.

Mr. FEIG. I am representing S. David Stoney who cannot be here today.

In regard to emergency response preparedness, the environmental assessment seems particularly deficient. A fairly elaborate evacuation plan exists for employees of the Savannah River plant. Nevertheless, there seems to be little local planning and virtually no coordination between Savannah River plant and local communities in spite of the fact that large-scale releases of radioactivity which could have serious effects on the health of individuals in surrounding communities could happen in several different ways. As of January 24, 1983, the Richmond County, Ga., Office of Emergency Management did not even have a direct radio hookup with the Savannah River plant, nor was there any evacution plan to deal specifically with a radiologic emergency. This is ominous indeed considering that Augusta, Ga., may soon have the dubious honor of having 6-7 large nuclear reactors, four without containment domes, operating within 30 miles of the city. Again, I would argue that preparing an EIS for the L-reactor would allow resolution of

Department of Energy and local community responsibilities for emergency response preparedness and would allow the development of coordinated plans between Savannah River plant and its neighbors. Such plans would be of crucial importance in the event of a radiological emergency.

Thank you.

Senator THURMOND. Thank you.

All right, we'll be glad to hear Mr. Tilson.

Mr. TILSON. My name is Elwin Tilson. I live in Savannah, Ga., adjacent to the Savannah River, so I have a very keen personal interest in these proceedings. I am an assistant professor in the radiation sciences. I teach courses in radiation psychics as well as radiation biology. For brevity's sake I will summarize some of my key points. Basically, my testimony deals with the fact that the public does not understand and does not trust the vast majority of information being put out by the Savannah River plant and the Department of Energy regarding the reactivation of the L-reactor. I base this observation on the fact that numerous individuals and even groups have approached me to explain to them areas of concern about information being put out by the SRP and the DOE. The public's problem in understanding these issues—understanding the issues involved, seems to stem from the quality of the information being distributed. I have numerous examples, in my written testimony, of information that is either misleading or downright useless, which I will not repeat here, however, one example is an example of questionable presentation that can be found in the environmental assessment document for the L-reactor. The assessment states that 32 times more activity from cobalt-60 than cesium-137 were found in the seepage basin, but the document does not answer the question of what happens to the cobalt-60 discharged. This implies, in essence, that there's no real problem with the cobalt-60 that's discharged. Another example was given here today—the seepage basins were, in essence, described as a mechanism to delay radio isotopes from entering the environment so that they may decay to a lower level of activity. However, if an isotope is dangerous for a half a million years, thirty years of delay before it hits the environment has no real effect on reducing the level of damage from the isotopes as implied by this example. The decision to reactivate the L-reactor has such wide reaching and long lasting implications the public must have a voice in the decision. The public cannot do that presently because of their lack of reliable and understandable information. To give the public the information they need to make the important decision, an environmental impact statement should be done.

Thank you for this opportunity to present my concerns.

Senator THURMOND. Thank you, Professor Tilson.

We have Mr. Jan Laan.

Glad to have you, Mr. Laan.

Mr. LAAN. Thank you.

My name is Jan Laan. I represent myself. I have 2 years of training by the EPA. I'm not sure whether Anne Gorsuch would concur with my statements, but she took care of me for 2 years training in that program of soils at the University of Wisconsin. I have a bachelor's in botany and master's degree work in physical geography. I also have training in science as a science writer and also a medical writer for the New York Times Co.

I take some of this expertise and training to look at the environmental assessment that DOE did, and I found a lot of holes in it and I've gone through in my written testimony and shown you what those areas are in the measurement and sampling and their conjectures and conclusions. I won't go through that right now, but I will state that the problem in presenting science to the public is that one of the main misconceptions is that scientists have all the answers. We don't. We have all the questions and some of the tools that deal with the questions, but we don't have all the answers. As we see here today, there are very many questions that need to be answered and an environmental impact statement would be one means of answering those questions.

Two of the problems that we face—the main problem that we face in this whole question is the biological transport of radioactive elements. The environmental assessment does not address that problem at all. It talks about suspended solids and then it talks in very minute detail about the accumulation of backwoods of fish. What happens to that radioactivity between the fish and suspended solids? That is the main question, the main problem.

You were just given a presentation here now that purported to show that there would be no problem with the drinking water. The problem with that assumption is that what is being assumed is that the radioactivity is being flushed into the river and is being mixed thoroughly in the water with no biological concentration, but if you'll check carefully the DOE assessment, that is one of the main assumptions and one of the main problems.

We're also free to state through a series of slides that seem to indicate that with the start of the L-reactor, the hot water would increase the activity and become violent. Well, what we're looking at in this case would be like taking a basket of fruit, say of apples, oranges, and peaches, and we look at it and we have six of them, it looks nice, we come back the next day and we have eight, but all the apples and peaches are gone and we only have one kind of fruit. What you have to do is look at the species variety and what has happened to the radioactivity and how it's being concentrated.

Thank you.

Senator THURMOND. Thank you, gentlemen, for appearing. Do you have any questions.

Senator MATTINGLY. I don't have any questions. I was just listening to what he said. I know I can read it later and try to understand it.

Thank you.

Senator THURMOND. Mr. Douglas C. Teper, Ms. Deborah Kearney, Ms. Susan Graber.

Mr. TEPER. My name is Douglas C. Teper. I'm a paid consultant in international affairs, my most recent client being the World Affairs Council of Georgia State University led by retired Marine Col. James D. McBrayer, Jr., professor of international geopolitical defense politics.

To summarize my statement, I'd like to start off with local economic impact. The restart of the L-reactor is good for business. The continuing epidemic of fetal deaths, infant mortality, cancer, and heart disease in downstream communities will keep doctors, hospitals, and morticians' business hopping for years to come. New business, such as bottled water and oxygen tanks will be needed because of the contamination, so the restart of L-reactor is good for business.

The environmental impact is marginal. New releases of tritium into the water, plutonium into the soil, radioactive zenon and krypton gases into the air, as well as iodine-131 into the milk, present new opportunities in evolutionary development. I'm sure that young children, like Senator Thurmond's, who drink milk contaminated by radioactive iodine-131 do not mind the eventual thyroid cancer in the name of more nuclear weapons, which brings me to our third point, national security. This Nation is at war. To do proper battle, we need more than the 60,000 nuclear weapons we currently possess. We need at least 2,000 new warheads for the MX, some 5,000 warheads for the sea-launched Trident, 1,500 warheads for air- and ground-launched cruise missiles and another 1,000 bombs for aircraft. I could go on with the different weapon systems that we currently are planning that we need the plutonium and tritium for. I guess my question is, are we supposed to wage war without adequate supplies of plutonium and tritium? I repeat, how are we supposed to wage war without an adequate supply of plutonium and tritium for our nuclear bombs? I guess, if you don't restart the L-reactor, we'll have to use conventional forces. Maybe we should not be waging this war. Who cares about the environmental consequences of restarting the L-reactor if there is no environment left? Who cares about winning a war when the preparation for battle destroys that which you were fighting for in the first place? Senators, I urge you to quit making nuclear bombs and start building a country without this nuclear madness which we can all be proud to live in and fight for.

Thank you. I'd like to submit this.

Senator THURMOND. Thank you. Ms. Kearney. How do you pronounce your name, Kearney or Karney?

Ms. KEARNEY. Kearney, a good Irish name.

Senator THURMOND. Thank you.

Ms. KEARNEY. I'd like to thank you very much for the opportunity to testify. I and my colleagues work for the State of Georgia. I'm representing myself and my Ph. D. is not from Clemson.

As a very concerned citizen new to the Savannah area, I am angry and admittedly frightened with regard to the planned reconstruction and reactivation of the L-reactor. I am angry because the National Environmental Policy Act of 1969 clearly indicates that an environmental impact statement is required on any major Federal action that could significantly affect the quality of human environment. The Department of Energy's environmental assessment does not adequately meet those requirements. As a citizen, I demand that the Department of Energy obey the law. I am angry and disillusioned that it has refused to do so in spite of the requests and pleas of citizens likely to be affected, especially myself. It seems to me that my health and safety were totally disregarded, and certainly compromised, during the decisionmaking process.

I am frightened by the lack of safety features proposed, such as no containment dome, no cooling towers to decrease thermal discharge and no independent National Nuclear Regulatory Commission inspection, all of which are requirements for commercial nuclear powerplants. Other public health risks seemingly disregarded by the Department of Energy include the flushing of 46 curies of cesium-137 into the river, other potential releases of radioactive contaminants, accidental and intentional, ground water contamination, and the hazards of transporting nuclear materials. These health risks potentially threaten my safety because, as a Savannahian, I am downwind and downriver from those planned and potential releases, because it is possible that in the future Savannah's drinking water may be drawn, at least partially, from the river, and because Savannah is a likely port through which nuclear materials will pass. In addition, I am extremely uncomfortable with the apparent lack of consideration of the cumulative effects of all Savannah River plant nuclear facilities. The bland reassurance of "no significant impact" in the environmental assessment only heightens my concerns.

Like Mr. Neuhauser of the Georgia Conservancy, I support Representative Thomas' request for a task force on the cumulative impact of SRP facilities and I'd like to request also the citizens participation in that task force or in a like task force.

Beyond immediate human health and safety concerns, I am angry that the ecosystem losses, especially the loss of at least 1,000 acres of wildlife habitat are shortsightedly disregarded as insignificant. The discrepancies I've read about in various reports concerning the acreage to be lost certainly warrants further investigation.

I believe the EIS is a necessity because there are so many unanswered questions and so many unabated fears on the part of the citizens. I believe it is a necessity because it's the law. As a citizen, I'm asking you, as my representatives in Washington, to demand that an environmental impact statement on the public health and environmental consequences of the L-reactor be completed before further construction and certainly before the actual operation commences.

Thank you.

Senator THURMOND. Thank you, Ms. Kearney. Ms. Graber, I believe.

Ms. GRABER. I am Susan Graber and I live in Beaufort County, S.C., and I'm here today because the water my family and my community drinks comes from the Savannah River. It is withdrawn from the river downstream from the Savannah River plant, then travels along an 18-mile canal to the Beaufort-Jasper County Water Authority where it is treated with chlorine before it comes through my tap.

I wanted to point out that we're having water problems in Beaufort—I'm cutting it short though. We are having a debate with Savannah about the use of ground water right now and the draw out of the ground for our water is causing saltwater contamination in Beaufort County and that's something we've got to—we've got to convince Savannah to start using the Savannah River. We need a good Savannah River. There are alternatives to discharging large quantities of scalding water into Steel Creek. NUS Corp., in their study prepared for the Department of Energy, considered and discussed nine possible cooling systems for the L-reactor. NUS considered both environmental criteria for choosing a cooling system, as well as engineering criteria, including costs, time requirements, production efficiencies, et cetera. The nine alternatives were ranked by preference using these various criteria. In their conclusions, NUS finds that the most preferred cooling system, considering both environmental and engineering criteria, is the use of cooling towers. In their list of nine, discharge into Steel Creek ranks an unimpressive sixth.

The question naturally arises: Why, then, does DOE choose to discharge into Steel Creek? The apparent answer: Because discharge into Steel Creek requires no lead time and because capital costs would be minimal.

It frightens me to think that all other considerations come after time and money. It frightens me to think that a project the magnitude of the restart of the L-reactor could be undertaken without broad debate and careful consideration.

It is true cooling towers would take time and that an EIS will take time. I am convinced that the issue is important enough to take that time. No nuclear reactor has been brought on line since passage of the National Environmental Policy Act without an EIS. Why should the L-reactor be any different? Why should the citizens of Beaufort, indeed the citizens of the Savannah River basin, be less protected by our laws than the people living around other nuclear facilities? We want to know how the L-reactor may affect our lives, and we have the right to know. I ask this committee not to allow the people of Beaufort to be shortchanged of their right to know and of their right to a clean and healthy environment.

Thank you.

Senator THURMOND. Thank you, Ms. Graber. Our last panel, I believe, is Mr. J. S. McMillan, Mr. William T. McLaughlin, and Ms. Barbara Wise. We are very pleased to have you and you may proceed.

Mr. McMILLAN. Senator Thurmond, my name is J. S. McMillan. I'm from Allendale, S.C. I have lived in Allendale County for about 57 years.

Sometimes when a man sits in a meeting of this kind, a lot of times what he hears is not what is said, but what is not said, so what I'm trying to say is radioactive nuclides are very dangerous to man's health. You cannot feel them, you cannot see them, you cannot taste them. In other words, there is no way for a man himself, without the aid of equipment, to identify these radioactive nuclides and I've heard people say that the Savannah River plant is the most monitored plant in the world, and very well it should be, it is the most dangerous plant in the world. I live downstream from this plant. I grow crops, I raise children, livestock, I fish in the Savannah River. I've fished in the Savannah River for 40 years, and I no longer fish in the Savannah River. I think the Savannah River is completely and utterly destroyed as far as an individual catching a mess of fish. I saw this lecture over here and nowhere did I see that any count of the radiation was taken in that great, clean Savannah River. Many people do not go in the Savannah River in my area now. They are fearful of their health. They cannot catch any fish there, and I'm saying that it is quite necessary that we have this environmental impact study. I'm in favor of a suit against the

Federal Government. I'm frankly afraid of it because I've found that all the Government considers is money but, nevertheless, I feel the need for this suit, and I have put my name and my reputation on the line.

There's just a few more things that I would like to say. I'll read part of my statement. I know that the radionuclides from this reactor will get into our water, our atmosphere, our crops, and then into our bodies. I want well-qualified scientists, that do not work for the Savannah River plant, to make an assessment as to the amount and kinds of nuclides to be released and the manner in which they will escape from the reactor.

I want the people in the State of South Carolina to be informed of the amounts of radiation that are released from the Savannah River plant and from all the nuclear reactors in this State. DHEC should have this responsibility, but to my knowledge they have not notified the people of South Carolina of the amount of radiation they are receiving.

I have heard several people here say that Du Pont looks out for their employees. Well, certainly, Du Pont looks out for their employees. When they radiate these employees, they wash it off; but when they radiate old farmer Mac down in Allendale, S.C., who tells me what I've got and how to wash it off?

I heard reports that the water in Steel Creek on the Savannah River, which by the way is a public landing for South Carolina, has from 15 to 30 times background radiation. That's a public landing, gentlemen, where people in the State of South Carolina put their boats in the Savannah River. I have information that the man that took this reading misread it and now says that this radiation in Steel Creek is 300 times the background radiation. The truth about the contamination released from this plant must be made public. We demand this.

I have a gut feeling that we in this area have a higher rate of cancer and heart disease than any other section of the United States. I request at this time, or demand, or something like that, that a public health study be started immediately of the surrounding populace, around the Savannah River plant, and compared to other areas that are not exposed to this deadly, dangerous radiation.

Thank you, Senators.

Senator THURMOND. Thank you, Mr. McMillan. Now we will hear from Mr. William T. McLaughlin.

Mr. MCLAUGHLIN. My name is Bill McLaughlin and I'm a science teacher at an environmental education center in Savannah, Ga. I teach about the environment and the interrelatedness of everything on Earth. As an ecologist, I am concerned with not just the immediate present, but the distant future. For these reasons, I am very interested in the effects of the reactivation of the L-reactor. I have a fear of the contamination of our water supply and a general deterioration of the environment as a result of the reopening of the L-reactor at SRP. This fear has motivated me to strongly request that this committee require the production of an EIS on the L-reactor. The Federal Government has a responsibility to its citizens to complete an extensive assessment before commencing L-reactor operations. I don't feel that the environmental assessment is extensive.

In place of reading my testimony concerning environmental principles and the necessity of an EIS, I would like to go immediately to my conclusion.

In conclusion, I would like to quote President John F. Kennedy when he spoke of responsibility and his concern that through science and technology we were thoughtlessly causing damage around the world.

President Kennedy said, and I quote: "The problem is difficult because it is hard to know in advance whether the effects of a particular experiment will help or harm mankind. The Government has the clear responsibility to weigh the importance of wide-scale experiments against the possibility of destructive effects", unquote. I understand the L-reactor is not an experiment. However, the President's concern for governmental responsibility certainly applies in this case.

A decision not to call for an environmental impact statement has the potential of creating a legacy which may not soon be forgotten. Thermal, pollution, the elimination of wetland habitat, and, most importantly, the creation of even more nuclear waste material, will not be the only problems generated by the L-reactor. It is imperative that we prepare a truly thorough study before creating unforeseen health, safety, and environmental problems.

I'd like to thank you for extending this hearing so that I and the other people on the end of the list could be heard orally today.

Senator THURMOND. Thank you very much, Mr. McLaughlin. We're glad to have you.

Any questions, Senator Mattingly.

Senator MATTINGLY. No questions.

Senator THURMOND. Ms. Barbara Wise. I believe you're from Augusta, Ms. Wise, aren't you?

Ms. WISE. Yes, sir.

Senator THURMOND. Your may proceed.

Ms. WISE. My name is Barbara Wise. I've lived in Augusta for nearly 7 years and have been employed as a high school counselor there for that length of time. I feel that it is most appropriate for me to respond to this action, that of the L-reactor startup, which could impact so drastically on me, on my family and on my community.

As brief background information, let me say that in my reading about the nuclear industry, most recently, Daniel Ford's well documented work, "The Cult of the Atom", subtitled "The Secret Papers of the Atomic Energy Commission", I have become increasingly horrified at the deception and coverups that are inherent to nuclear policies. I have been astonished at the willingness of that industry to subject whole populations to imminent danger, varying in degree from mild radiation contamination to sudden death. A recent Federal report, Sandia Laboratory of 1982 estimates that the worst case reactor accident could cause over 100,000 deaths and $314 billion in property damage. It is an interesting and notable contradiction that the industry's advocates are full of rhetoric about plant safety, reactor safety, even radiation safety, et cetera, et cetera, but at the same time they are unwilling to back these claims by accepting financial responsibility for a nuclear accident. Witness the Price-Anderson Act, enacted in 1957, specifically to limit the industry's liability to $560 million per accident, a minute fraction of the probable cost of civil and property damage resulting from a nuclear accident. This is very revelent to us in the shadow of the L-reactor. It is in this climate and in the aftermath of the Three Mile Island accident that I want to respond to the L-reactor startup. The industry proposal here is to reactivate a 29 year old reactor, already nearing the end of its life expectancy of 30 to 40 years, which has been mothballed since 1968. Further, it proposes to proceed without doing a proper environmental impact statement, which is in blatant violation of Environmental Protection Agency regulations. It is against the law. An even more flagrant abuse of current NRC standards is the plan to proceed with the restart without a containment dome, which is the protection device that protected the Harrisburg population from a much worse disaster only 4 years ago. In the last 10 years, the NRC has required all new reactors to have containment domes. As an area citizen, I have to ask: How much more dangerous is it to fire up an old reactor than a new one, and why wouldn't it be as subject to at least as stringent regulations as a new reactor?

All of this, though, I'm responding to as a relatively informed lay person. What I would like to conclude with is my observation as a professional in the field of education. I would like to comment briefly on the psychological effects on some of the young people of this area with whom I have had direct contact. Many of them have voiced reactions to the international nuclear situation, as well as more specifically to the problems associated with living in close proximity to the Savannah River plant, to them the "bomb plant." The L-reactor controversy has certainly contributed to their anxiety at being used as laboratory animals in the ongoing nuclear experiment. Many students articulate the feeling that they may have no future, that their lives and shadowed by an omnious technology that is out of control. For example, it is common knowledge among students that even after 30 some odd years this industry still has not come up with a viable solution to handling its own radioactive waste. I know the feeling and sentiments they have, but it has not done it yet, that there is over twenty-five million gallons of high-level waste in temporary containment at the Savannah River Plant. In this age of the high-tech fix, 30 years seems like a long time to students. They have articulated to me their feelings of alienation and of their impotency to deal with problems of this magnitude. One common response is to revert to a "do it now" mode, of grabbing fast pleasures now with a deemphasis on a reasonable preparation for the future. Many have become a motivational.

Another common response is psychic numbing, which is frequently referred to in the literature as a method of coping with the feeling of impending disaster, that is, to simply become an emotional zombie, in an attempt to protect themself from an unacceptable reality. I frequently see, these days, students who have no emotional affect about anything, including death of their parents, assault, rape, or other seemingly emotional experiences.

So, in my hurried testimony, I would like to say that I am in total agreement with the union of concerned scientists when they demand that in the future an assessment of psychological effects be included in an Environmental Impact Statement for the commissioning of all reactors.

I thank you for this opportunity to speak for a disenfranchised group, or so they regard themselves, the young people of this area, and I want to express their hope that in the near future, our generation, the decisionmaking adults of today, will begin to make more sane decisions with regard to the fate of their Earth.

Thank you.

Senator THURMOND. Thank you, Ms. Wise, we were glad to have you with us. Senator, do you have any questions.

Senator MATTINGLY. No questions.

Senator THURMOND. Let me see now, is Mr. Morgan here?

Mr. MORGAN. Yes, sir.

Senator THURMOND. I'd like for Mr. Morgan to come around, if you would, and answer a few questions that have grown out of this testimony.

Mr. Morgan, we have heard much testimony here today. Some of the testimony has been conflicting. In an effort to clarify the position of the Department of Energy, I would like for you to answer very clearly and succinctly a series of questions. I am sure that at this point in the day everyone would appreciate brief and understandable answers.

First, will the health of citizens of South Carolina and Georgia be harmed in any way by the restart of the L-reactor?

Mr. MORGAN. No, sir.

Senator THURMOND. Next, will Savannah River ecology be harmed in any way?

Mr. MORGAN. No, sir.

Senator THURMOND. Third, why did you not do an Environmental Impact Statement from the outset, and why not do one now?

Mr. MORGAN. Subsequent to the testimony of Duane Sewell, in March of 1980, there was an Authorization Conference Report, that stated—

> None of the funds appropriated pursuant to an authorization of appropriations contained in this act may be obligated or expended for the purpose of preparing an Environmental Impact Statement not already in the process of preparation with respect to the operation of any defense facility of the Department of Energy unless the preparation of such statement is required by statue.

So, in that process, before we could reach a decision to request release of funds from Congress to do an Environmental Impact Statement [EIS], we had to do an Environmental Assessment. Had the Environmental Assessment said that there was a significant impact to the environment, we would have recommended doing an EIS. With the determination of a finding of no significant impact, the law clearly states that you can proceed in implementing the action. Unless we are advised that there is a finding of significant impact, we are not allowed by the statute to proceed with an environmental impact statement, sir.

Senator THURMOND. Do you feel it would be helpful to do one now or do you feel that the assessment you did covered the points that an EIS would cover?

Mr. MORGAN. I believe that all of the issues that were raised today have been covered in the Environmental Assessment. There was an earlier statement that the cesium in the fish was not covered in that assessment. I would like to submit that it was. It was clearly stated, as far as the cesium transport, in the Environmental Assessment.

Senator THURMOND. Mr. Morgan, why were public hearings on environmental concerns not held?

Mr. MORGAN. It was not required for the Environmental Assessment by the CEQ regulations implementing the National Environmental Policy Act. If we were to do an Environmental Impact Statement, we would conduct public hearings. We have responded to all the questions and the concerns expressed by the Beaufort-Jasper Water Authority and other agencies and we would be happy to respond to all the issues raised here today, sir.

Senator THURMOND. Mr. Morgan, why should the Department of Energy at the Savannah River plant not be required to do what a commercial nuclear reactor would have to do with respect to the discharge of hot water?

Mr. MORGAN. We had operated this reactor in a mode where we discharged hot water effluent into the onsite streams. As you know, we operate two other reactors in this mode at this time, and we were permitted to do that by the Environmental Protection Agency, in 1976. Permitting authority was subsequently turned over to the State of South Carolina and we are currently operating under a permit for the discharge of water under the State NPDES permit, sir.

Senator THURMOND. Do you feel the current arrangement is satisfactory, or do you feel it would be helpful if you had to meet the same requirements as a commercial nuclear reactor?

Mr. MORGAN. We believe that we are comparable to the Nuclear Regulatory Commission requirements in the safety of our reactors, sir.

Senator THURMOND. Mr. Morgan, would you please explain as simply as possible why the flushing of cesium into the Savannah River will not, in your opinion, be a health hazard?

Mr. MORGAN. I stated to you earlier today, Senator, that our calculations of the cesium going into the Savannah River from Steel Creek Swamp is far below the safe limits that are required by the Environmental Protection Agency. We are one twenty-thousandths of the limit that EPA allows for cesium in drinking water and, as I stated earlier, I would have to drink 40,000 quarts to get to that limit.

Senator THURMOND. 40,000 quarts in what period of time?

Mr. MORGAN. One day, every day of my life, sir, in order to get to the limit the EPA says that you can drink safely.

Senator THURMOND. In other words, are you saying that a person would have to drink 40,000 quarts of water——

Mr. MORGAN. Every day——

Senator THURMOND [continuing]. From the Savannah River every day?

Mr. MORGAN [continuing]. To even get to the limit that EPA says is safe for you to drink every day.

Senator THURMOND. Even to the limits where they say it's safe?

Mr. MORGAN. Without getting harmful effects, sir.

Senator THURMOND. Do you believe that?

Mr. MORGAN. Yes, sir.

Senator THURMOND. What routine releases of radioactivity will there be into our air and water supplies? Will these be analyzed in conjunction with SRP's other activities?

Mr. MORGAN. We have reviewed the atmospheric releases and the numbers that are quoted are far below the limits we are required to meet. I would like to further state that every environmental release from the Savannah River plant is published in the annual report and distributed to anyone that wants it, sir.

Senator THURMOND. Mr. Morgan, what is the accurate figure for the acreage of wetlands which will be affected by the discharge of hot water? I have heard figures ranging from 1,000 to 28,000 acres.

Mr. MORGAN. It's 1,000 acres.

Senator THURMOND. 1,000 acres?

Mr. MORGAN. Yes, sir. The 28,000 number was a number in the Paterson report that included all the area of drainage, that would go into Steel Creek. That area is not affected by the hot water. I would like to further state that there was a question as to whether we were hiding or downplaying this area and, as you know, we invited you and Senator Mattingly, in an overflight this morning in a helicopter, so you could adequately see the affected areas. I'd like to respond that we are not hiding anything and we appreciate your time to view that area from a helicopter.

Senator THURMOND. Mr. Morgan, will operation of the L-reactor continue to discharge cesium into Steel Creek?

Mr. MORGAN. No, sir, the only cesium that will go into the Savannah River is the projected 46 or 47 curies that are currently in the bed of Steel Creek that will be remobilized. There will be no measurable quantities of cesium added to Steel Creek from the L-reactor operations, sir.

Senator THURMOND. The L-reactor operation will not increase any cesium going into Steel Creek or the Savannah River?

Mr. MORGAN. No, sir, it will not discharge any further measurable quantities of cesium into Steel Creek, sir.

Senator THURMOND. I don't know too much about curies. How much is 47 curies and is that any kind of hazard to——

Mr. MORGAN. I have a vial here with the exact amount, which is 0.55 gram. In this vial is an equivalent amount of nonradioactive cesium-132. This is the exact amount of cesium that would be flushed down Steel Creek in 10 years of operation, sir.

Senator THURMOND. Ten years?

Mr. MORGAN. Yes, sir.

Senator THURMOND. Would you mind holding that up so we can see it? This is about, I guess, maybe a fourth or a third of a teaspoonful; is that right?

Mr. MORGAN. Yes, Mr. Chairman.

Senator THURMOND. And you say it would take 10 years to flush this much down——

Mr. MORGAN. Yes, sir.

Senator THURMOND. Steel Creek, did you say?

Mr. MORGAN. Yes, sir. I might state that the cesium there is in a cesium nitrate form for ease of handling, and the total weight of that is 0.81 gram. Of that 0.81 gram, 0.55 gram is cesium.

Senator THURMOND. As I understand it, starting up the L-reactor would not flush any new cesium down and what you are speaking of here is cesium that is already in the sediment?

Mr. MORGAN. It's already existing in Steel Creek, sir.

Senator THURMOND. It's already in Steel Creek now?

Mr. MORGAN. Yes. sir.

Senator THURMOND. And only this much, about a fourth of a teaspoonful would be flushed down in a period of 10 years?

Mr. MORGAN. Yes, sir.

Senator THURMOND. Would that be dangerous to the public?

Mr. MORGAN. No, sir, The discharge of the water, even at the mouth of Steel Creek, is below the EPA standard prior to mixing with the Savannah River and it is far below, by a factor of a thousand, a comparable NRC limit for discharge.

Senator THURMOND. Mr. Morgan, what temperature of hot water will be discharged back into the Savannah River and what effect will this have on the river?

Mr. MORGAN. Under the worst case condition of a 5-day summer temperature, the maximum temperature reading reaching the Savannah River is 90° F. That is the exact number that the class B stream requirements are in the State of South Carolina. The worst case condition, sir.

Senator THURMOND. When you place this hot water back into the Savannah River, the temperature of the water that you flush back would not exceed the requirements allowed under the law of the State of South Carolina?

Mr. MORGAN. That is correct, sir.

Senator THURMOND. Are you sure about that?

Mr. MORGAN. Yes, sir. Now, in a permiting situation when you have a temperature difference between the river and the stream, there is allowed a mixing zone that has a 5° temperature difference limitation and a width that is less than one-third of the width of the river. We meet those requirements. This allows the migration of fish for spawning up the river without intervention by the temperature, sir.

Senator THURMOND. What effect will flushing hot water into the Savannah River have on fish and marine life in the river?

Mr. MORGAN. We believe that it will have no effect on the fish population in the river, sir.

Senator THURMOND. I believe Dr. Patrick testified along that line.

Mr. MORGAN. Yes, sir.

Senator THURMOND. How much water will be withdrawn from the Savannah River for use by the L-reactor, and what effect will this have on marine life?

Mr. MORGAN. There is an additional 165,000 gallons per minute.

Senator THURMOND. Per minute?

Mr. MORGAN. Gallons per minute that we remove from the Savannah River. That's approximately 4 percent of the average flow of the Savannah River. We anticipated that, based on our studies, there would be an increase in impingement of fish on the screens at the inlet of about five fish per day as a result of the restart of the reactor.

Senator THURMOND. In other words, when you pull water out of the river, you estimate there will be as many as five fish a day pulled out with 176,000 gallons of water?

Mr. MORGAN. Yes, sir, they will be impinged upon a screen. They will not go into the system, but they will be entrapped on the screens at the pumphouse.

Senator THURMOND. They would be entrapped there?

Mr. MORGAN. Yes, sir.

Senator THURMOND. What do you do with them?

Mr. MORGAN. At this time they're dead, sir.

Senator THURMOND. You're not going to eat them, are you?

Mr. MORGAN. No, sir.

Senator THURMOND. What alternatives were considered in the discharge of hot water into Steel Creek?

Mr. MORGAN. There were nine alternatives that we looked at that are discussed in the environmental assessment. One was, of course, the direct discharge. The other was a spray canal into Steel Creek, a series of small impoundments, and I have charts and diagrams, if you'd like to see those, but in each case the temperature change was minimal and the other wetlands were impacted except for the cooling tower alternative. The cooling tower only affected 30 acres of land area, at a capital cost of $39 million, but we felt that the expenditure of funds on that was not appropriate since there was no impact due to direct discharge. We felt that that would be an inappropriate expenditure of Government funds, sir.

Senator THURMOND. I was just getting ready to ask you about that cooling tower. It's been suggested that DOE should use a cooling tower on the L-reactor and you said how much would that cost?

Mr. MORGAN. $39 million, sir.

Senator THURMOND. How much additional safety would that guarantee to the people who use the river and who use the river water?

Mr. MORGAN. We believe that if we were to use a cooling tower, there would be increased fogging.

Senator THURMOND. Increased what?

Mr. MORGAN. Fogging in the area, sir.

Senator THURMOND. Fogging in the area?

Mr. MORGAN. Due to the cooling. There would be also potential icing during the winter that would cause a hazard. There would be increased salting of the area as far as the crops, and we believe that if we were to go with a cooling tower it would require an environmental impact statement. We didn't feel it was necessary, sir.

Senator THURMOND. Well, do you know of anything independently that you could suggest that would result from building a cooling tower?

Mr. MORGAN. No, sir.

Senator THURMOND. In other words, you think the present arrangement there guarantees the public as much safety and as little hazard as if you had a cooling tower?

Mr. MORGAN. Yes, sir.

Senator THURMOND. And you would save the Government $39 million?

Mr. MORGAN. Yes, sir.

Senator THURMOND. Now, you really believe that, or do you want to save the Government money?

Mr. MORGAN. We have to make assessments, as you know, on the plant, as to the utilization of Government funds, and I would have to say that I appreciate your past support of the DWPF, the Defense Waste Processing Facility. I recognize there are a limited amount of funds available from the Government; therefore if an additional $39 million were made available to the Savannah River plant, I would recommend that it be used for the disposal of high-level waste, where we have millions of curies of high-level waste in tanks. It would be used to expedite the construction of that authorized facility and that would be my priority for the utilization of the funds, sir.

Senator THURMOND. I want to help the Defense Department all I can with the weapons they need, but we must, and I repeat, we must protect the public. We must protect the health of the public, and we want to be sure that whatever is done down there, there would be no hazards to the public over and above what exists at present.

Mr. MORGAN. I would like to state clearly, sir, that the history of the Savannah River plant has shown that we have had in the past a great concern for not only the workers, but the public, and we have made everything known, as far as releases and concerns.

Senator THURMOND. Has the cumulative effect of the L-reactor restart, together with existing facilities, been addressed and if so, how?

Mr. MORGAN. Yes, it has, and it's in the Environmental Assessment, sir.

Senator THURMOND. What is the status of the South Carolina Department of Health on an environment permit for Steel Creek, Mr. Morgan?

Mr. MORGAN. We currently are operating under the extension of the NPDES permit, and we are currently negotiating with the State Department of Health and Environmental Control and others as to the continuation of that permit. We have recommended an extension of the NPDES permit, including activating the L-reactor on that permit, and we are awaiting a response from the State at this point in time. I would like to restate what I said earlier; that we are currently in good faith negotiations with the State and our relationship is fine, sir.

Senator THURMOND. Now, Dr. Tilson spoke of cobalt-60. Did you hear his testimony?

Mr. MORGAN. No, sir, I'm sorry, I did not.

Senator THURMOND. Well, he spoke about cobalt-60. I believe he said that cobalt-60 was embedded in the creek bed and that you would be flushing that out into the river. Would you care to answer that?

Mr. MORGAN. There is some cobalt-60 in some of the seepage basins which is not mobile and would not reach the aquifers.

Senator THURMOND. In other words, when we restart this L-reactor, there will be no cobalt flushed out that will go into the river?

Mr. MORGAN. No, sir. The small amount of cobalt-60 in the Steel Creek floodplain would not be of concern.

Senator THURMOND. Now, you've heard the testimony of various people here today. We have had many testifying for and against. Can you imagine why so many people have concerns about this? Have they been misinformed or have they had their suspicions aroused for other reasons? From what you say, you seem very confident that the public will be protected and that there is no hazard in starting this L-reactor, that you have carried on your Environmental Assessment, and undergone that thoroughly, you have done everything required, and that building the cooling tower would not have improved the situation. Why are so many people concerned about this matter of restarting the L-reactor unless an Environmental Impact Statement is made?

Mr. MORGAN. I don't know, sir. We have dealt with one report and that, I might say, is the Patterson report, relative to the Beaufort-Jasper, County Water Authority, where we found there were a grave number of errors in that report. We responded by an official press release and I believe that the Beaufort-Jasper County Water Authority attached those letters of response to the testimony that they have provided here earlier today, sir.

Senator THURMOND. Are they satisfied now that if you start this reactor that there would not be any danger?

Mr. MORGAN. I believe that there were two comments that Mr. Duryea made. One was that he would like to have us continue to pursue or consider alternate cooling methods, but that he had no problems with the quality of water in the Beaufort-Jasper County Water Authority treatment plant. He did also mention that he would like a firmer commitment from the Department of Energy that we would take care of things there, if there was any problem. We had said that we would assist if there was any problem, and he would like DOE to make a stronger commitment. I am pursuing that situation right now. I do not believe that it's within my authority to commit Government funds, but I assured him that there will be no buildup of cesium in the basins at Beaufort-Jasper and if the limits for radioactivity were exceeded there, certainly we would be responsible for cleaning that up. There's no way that we see that there's a problem there, sir.

Senator THURMOND. Now, several people have suggested there might be some compromise; that they do not want to stop the reactor from going ahead since the Defense Department needs this material. I believe you said that it produces more plutonium, the Savannah River plant does, than any other place and it is the only place that produces tritium, and we do not wish to handicap activities there, but they feel that possibly some research for that could be done just to offset the perception of the public that there is a hazard there. Would you care to answer that at this time, or is that premature?

Mr. MORGAN. I would like to say that we have made some alternate proposals that would cover an expanded thermal study, not just including the L-reactor. As you know, we also dump hot effluent in Four Mile Creek and Pen Branch. We would open up that to an extended study to determine if there is any impact and what mitigation measures could be taken. In the meantime, we would like to restart or have an extension of the current NPDES permit to operate L-reactor for a 2-year period when we think a study could be done. Then if that study dictated that we should take other mitigating action, we would provide a request to Congress to fund those mitigating measures. That's the general idea of what we have proposed at this time, sir.

Senator THURMOND. In other words, you feel there is no danger from the situation of restarting the L-reactor or from the other reactors that are already operating?

Mr. MORGAN. Absolutely correct, sir.

Senator THURMOND. However, to offset the public perception that there might be danger, are you willing to do research or do additional work?

Mr. MORGAN. There is absolutely no danger in my mind, sir. What we're dealing with is a potential impact to the environment. There are differences of opinion, and I believe honest differences of opinion as to what is significant and what is not significant. I think that the thermal study, would be a reasonable thing to do. I would like to restate one other thing, though, that was mentioned here and that's the delay of L-reactor startup. In the latest Presidential stockpile memorandum which governs my operation, there is a statement that says that we should restart the L-reactor as soon as possible, but not later than October 1983. So I agreed to proceed within the implementation directions that I have, and I cannot commit to delaying the restart of that unless so directed by a revision of the Presidential stockpile memorandum.

Senator THURMOND. What you are saying, as I understand, is that you have directions that it should start not later than October to produce the materials that will be needed for our Defense Department, is that correct?

Mr. MORGAN. Yes, sir. In the meantime, I would suggest that, while L-reactor is in operation, we would open up discussions as to the thermal effluents not just from the L-reactor, but from the other two operating reactors that discharge into the Savannah River, and to do that in public hearings openly and have participation by the State of South Carolina, the State of Georgia, and any of the institutions that the States would like.

Senator THURMOND. And can you do that without further authority, or do you have to have a statute——

Mr. MORGAN. Yes, sir, I believe I can.

Senator THURMOND [continuing]. Through the Energy Department or Defense Department? In other words, just how would you go about that?

Mr. MORGAN. I've already discussed this with the Principal Deputy Assistant Secretary for Defense Programs, and he concurs in that discussion and the recommendation.

Senator THURMOND. You have already discussed that with him and he has agreed to approve that, have you?

Mr. WADE. Yes, sir.

Mr. MORGAN. One other thing I'd like to say, Senator, is that we have used data in the EA as to predicted numbers and I would like to also submit to this committee that we will not exceed those predicted numbers. If we begin to, or if there's any indication that we will exceed those numbers, we will modify the operations and take appropriate action so that they are not exceeded. If they are exceeded, or if there's a potential of them being exceeded, we will re-visit that with another environmental assessment or an environmental impact statement.

Senator THURMOND. Now about the 1,000 acres there, would that have to be used as it is now used, or could any of that be retrieved?

Mr. MORGAN. The 1,000 acres that we're talking about is the base of Steel Creek, from the reactor down to the delta, and the delta fan beyond, where the temperature will be increased by restarting of the L-reactor. If we implemented other measures as a result of the thermal study that we are proposing, that thousand acres would recover again. We will not affect any virgin cypress swamp area. We're affecting areas where there is very small shrub growth at this time, as I think you saw earlier this morning from the helicopter, sir. You also saw the dead trees there that were killed from the previous operation.

Senator THURMOND. If you start up the L-reactor before you do this study, how would that affect the thousand acres we are talking about?

Mr. MORGAN. When we start up L-reactor, it would discharge heated effluent and kill some of the current grass and brush that is in Steel Creek area. It would recover if, as a result of the study, we decided to take other action, such as cooling towers, ponds, or other measures that might be appropriate to reduce the temperature in the Savannah River Swamp area. It would recover to its present state in a few years, sir.

Senator THURMOND. So, in other words, by starting up the L-reactor, it would not do further damage to that thousand acres?

Mr. MORGAN. We do not believe that it would do further significant damage to that thousand acres. However there is brush and there is grass in that area that will be killed by the hot effluent, sir.

Senator THURMOND. Senator Mattingly?

Senator MATTINGLY. Thank you, Senator Thurmond.

One of the witnesses had referred to a 1977 accident at the Savannah River plant. What was the nature and the cause of that incident?

Mr. MORGAN. I'm sorry, sir, I wasn't here at that point in time. There was some release of tritium from a tritium processing facility caused by a broken valve, sir.

Senator MATTINGLY. Could you supply further information, for the record, as to the Savannah River plant safety record.

Mr. MORGAN. Yes, sir.

Senator MATTINGLY. Generally, what is the safety record for the Savannah River plant?

Mr. MORGAN. Outstanding, sir. We do have the AEC's best ever award for safety.

Senator MATTINGLY. Much of what we have been discussing involves normal operations of the plant. As we know from the Three Mile Island incident, the unexpected can sometimes happen. If a major accident occurred, how long could the water supply for Savannah and other cities downstream be interrupted and could there be damage to the——

Mr. MORGAN. There's no accident scenario that we have postulated that would interrupt water supplies downstream of the Savannah River plant.

[The information follows:]

DEPARTMENT OF ENERGY,
Washington, D.C., March 21, 1983.

Hon. Mack Mattingly,
U.S. Senate,
Washington, D.C.

DEAR SENATOR MATTINGLY: On February 9, 1983, Robert Morgan and Troy Wade testified before the Senate Committee on Armed Services at North Augusta, South Carolina, concerning restarting the L-reactor at the Savannah River Plant.

During the course of the hearing, you requested certain information which was to be provided for the record. A copy of the Insert for the Record for page 209, which also was provided directly to the Committee, is enclosed.

If you have any questions, please call Hank Edler or Tom Pretorius of my staff. They will be happy to assist you.

Sincerely,

THOMAS H. PRETORIUS
(For Robert G. Rabben,
Assistant General Counsel for Legislation).

Enclosures.

SAFETY RECORD—SAVANNAH RIVER PLANT

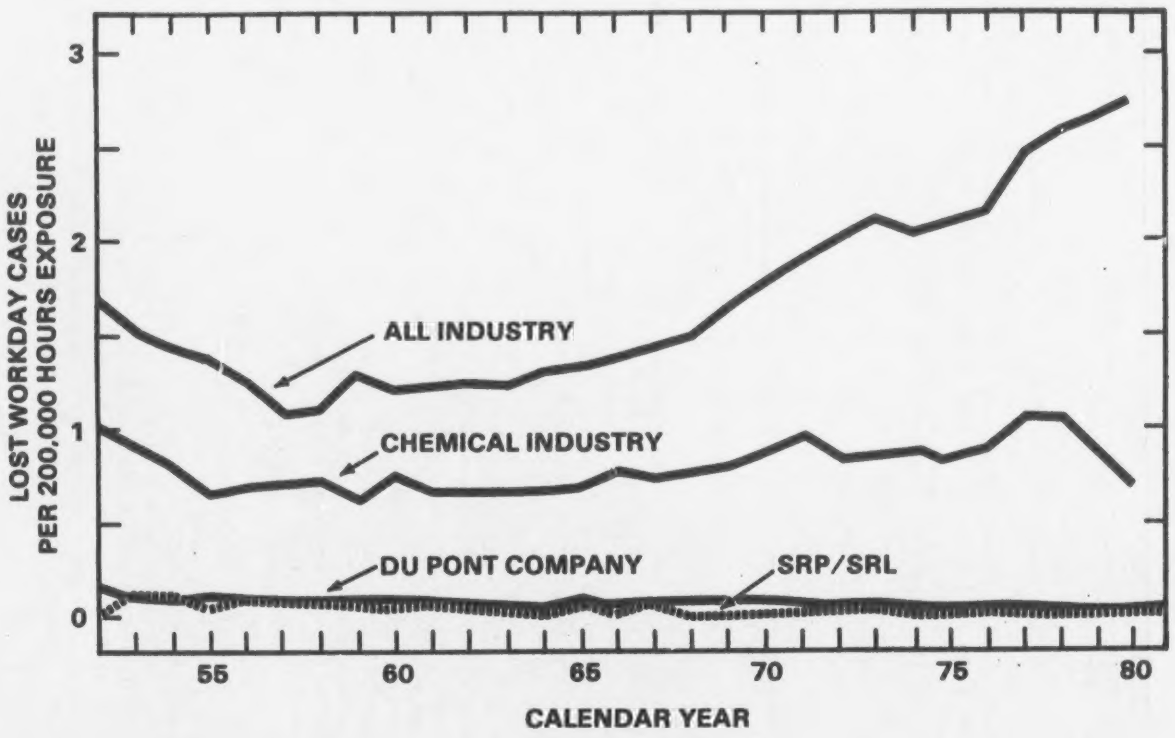
The Savannah River Plant (SRP) has successfully operated its nuclear production reactors for 115 reactor-years, chemical separations facilities for 55 plant-years, fuel and target manufacturing facilities for 55 plant-years, heavy water separations plant for 28 years, and waste management facilities for 28 years. There has been no accidental criticality in operating these complex production facilities for producing the needed nuclear materials for national defense.

Since plant startup, radiation exposures from nuclear operations have been maintained consistently well within the Department of Energy (DOE) and national standards for radiation protection. Over the past five years, the average annual employee radiation exposure has been less than 4 percent of the total body dose standard of 5 rem/year with the maximum dose less than 59 percent of the standard. No fatalities or injuries have occurred since plant startup from the nuclear operations or radiation exposure.

The industrial safety records of SRP compare favorably with National Safety Council serious injury rates (lost workday cases per 200,000 hours exposure) for all industry and the chemical industry in particular (attached figure). The best safety records achieved by all Atomic Energy Commission operations were achieved at the SRP, i.e., production—39,345,150 man-hours without a lost work injury; construction—4,847,317 man-hours without a lost work injury; and government workers—4,935,000 man-hours without a lost work injury. In 1972, the SRP received the "AEC's Best Ever" safety award for operation and construction of nuclear facilities. During the past five years, SRP has ranked first among all DOE operations in safety performance achieving a serious injury rate one-third of the DOE average rate and one-ninth of the National Safety Council rate.

SRP operational experiences have demonstrated that safety and protection of workers are of primary importance in producing the needed nuclear materials for national defense.

SAFETY PERFORMANCE



Senator **Mattingly**. You've been asked several times about the cooling towers. In those comments you made about the cost of the cooling towers, if they were required, you probably could request the consultant fees that are used in Washington, D.C., and try to make a lateral move of funds. In my conclusion, I think that, surely, with Senator Thurmond being here today in a public hearing, and I'm here, shows that everybody's concerned about what's going on.

Mr. **Morgan**. Yes, sir.

Senator **Mattingly**. And I would like to have the L-reactor restarted because of our national defense needs, but still with the caveats that I have mentioned in my original statements. This is just an observation. I feel the DOE, just for public confidence, should have done the EIS back in 1980 on this. I think that's probably one reason why the EA is observed by some as inadequate and is in fact probably why so many people turned out here today. I think that is clear evidence that there's a lot of concern. I'm glad to see that since our time, I guess, in talking in Washington, D.C., at least we've had some movement on the part of the DOE. I think back then nobody was going to do the EIS, and now you are talking about doing some type of study. You know, I feel that an abbreviated EIS or an EIS could be done and made public in time for a start of the L-reactor in the future if DOE, EPA, and the U.S. Congress put their shoulders to the wheel.

Mr. **Morgan**. May I comment, sir?

Senator **Mattingly**. Yes.

Mr. **Morgan**. Most of the time that we've discussed relative to the 18 months is not the preparation of the document, but the process of scoping it and doing that in a public meeting, allowing the time for comment by the public, putting the document together as described, and then our interaction with the public. That's why I'm suggesting that in this other study we would be, in effect, doing a public interactive process which will be very similar to the process that we would go through in an EIS, but we would do it on the thermal discharge from the plant, sir.

Senator **Mattingly**. That's what I'm saying. The EA has answered some questions, and the balance of the questions, as stated here today, could probably be answered in an expedited fashion. If everybody got together and——

Mr. **Morgan**. If I may, I'd like to submit for the record additional testimony and also responses to the issues that have been raised here today.

Senator **Mattingly**. I would like to go on record also and comment that I thank everybody for coming today to comment, not only the Government witnesses, but those people from the private sector that had concerns, and also those people that took off work today and possibly some of them had to leave before they had an opportunity to speak.

Senator **Thurmond**. Mr. Morgan, would you be opposed to a public comment period of, say, 60 days, on the environmental assessment, starting today?

Mr. **Morgan**. I personally would not object to that, sir, but I would hope that in the process of a public comment period, we could resolve all questions raised. If that would extend the startup of the reactor, of course, I couldn't agree to a 60-day commentary.

Senator THURMOND. We will keep this hearing record open for 7 days after today for additional information to be submitted for inclusion in the record. If anyone wishes to submit additional comments, feel free to send them to me or to the attention of Mr. Jim Smith, Senate Armed Services Committee. The hearing record will be published. If anyone would like to obtain copies of this record, they may be puchased from the Government Printing Office, Washington, D.C. They would have to be paid for. I don't know what the price will be. If you have any questions, you can contact either me or Senator Mattingly and we will be glad to cooperate with you. I want to take this opportunity to express my deep appreciation to Senator Mattingly for attending this hearing. He's a very able, dedicated Senator. He's doing a fine job in Washington for the State of Georgia and, Senator, I thank you for coming.

Senator MATTINGLY. Thank you, Senator Thurmond. I think it's obvious here tonight—I think it has gone into the night—that, undoubtedly, if the Winds of War had got started, we probably wouldn't have anybody left, anyway.

Senator THURMOND. We thought we would finish about 4 or 5 o'clock. It is now almost 7:30, but we are glad to take the time. We are interested in the people. Our job is to protect the people, to help the people, and it doesn't matter how small the people are or how big they are, how rich or how poor they are, we are interested in all the people. We want to do what we can to alleviate any fears that they have and take such steps as may be necessary to protect them and to protect their health and have no hazard that could be detrimental to them.

Mr. MORGAN. I state that as my first priority and my job, too, Mr. Chairman.

Senator THURMOND. And, Mr. Morgan, we want to thank you and those at the Savannah River plant for your fine cooperation here at this hearing.

Senator MATTINGLY. We've seen a great movement that you've made in the last several days. Thank you, Mr. Morgan.

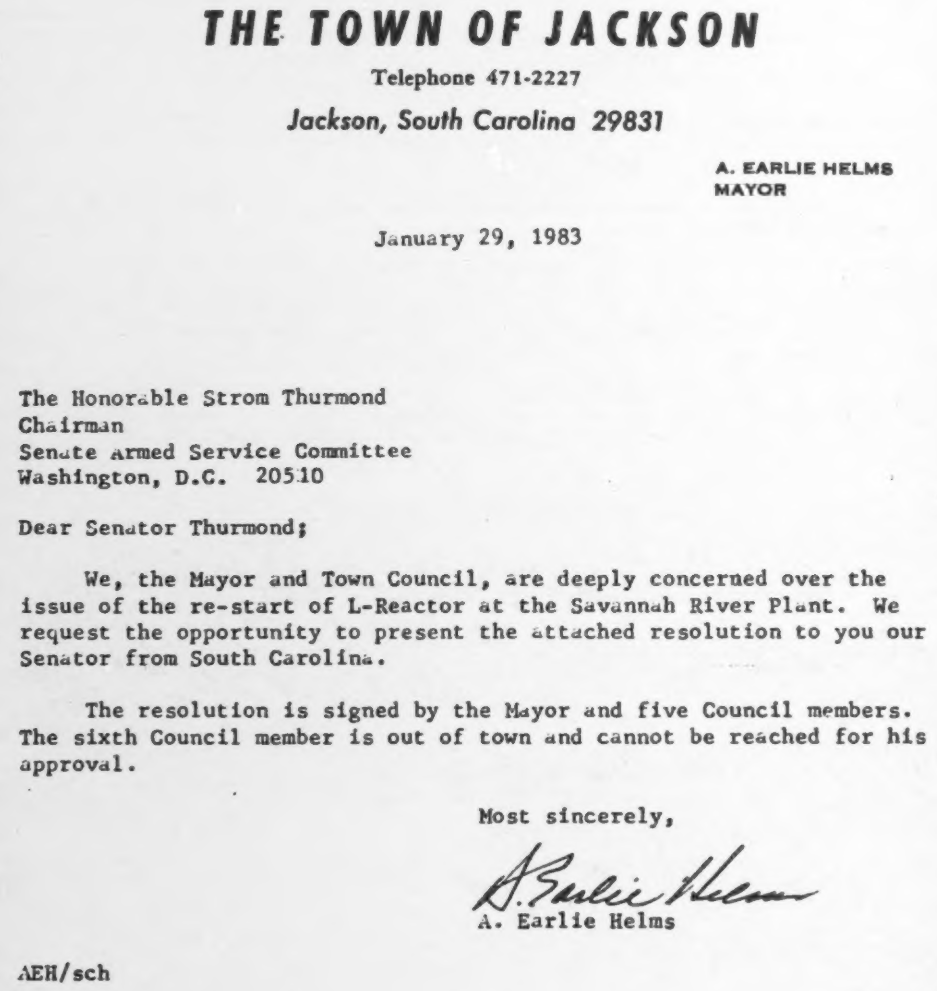
Mr. MORGAN. You're welcome, sir.

Senator THURMOND. Thank you very much and the hearing stands adjourned.

[Whereupon, at 7:29 p.m., February 9, 1983, the committee hearing adjourned.]

INFORMATION RECEIVED PRIOR TO THE HEARING

[The following statements and communications were received prior to the hearing:]



THE TOWN OF JACKSON
Telephone 471-2227
Jackson, South Carolina 29831

A. EARLIE HELMS
MAYOR

January 29, 1983

The Honorable Strom Thurmond
Chairman
Senate Armed Service Committee
Washington, D.C. 20510

Dear Senator Thurmond;

We, the Mayor and Town Council, are deeply concerned over the issue of the re-start of L-Reactor at the Savannah River Plant. We request the opportunity to present the attached resolution to you our Senator from South Carolina.

The resolution is signed by the Mayor and five Council members. The sixth Council member is out of town and cannot be reached for his approval.

Most sincerely,

A. Earlie Helms
A. Earlie Helms

AEH/sch

THE TOWN OF JACKSON
Telephone 471-2227
Jackson, South Carolina 29831

RESOLUTION

OF

JACKSON CITY COUNCIL

ON

Restart of L-Reactor at the Savannah River Plant
January 28, 1983

WHEREAS, The Department of Defense and the Federal Government have determined that the restart of L-Reactor is vital to our national defense and a major delay in restart could endanger our nation's security, and

WHEREAS, the L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968, and

WHEREAS, The DuPont Company in conjunction with the Department of Energy has operated the Savannah River Plant including three other Reactors in a safe and efficient manner, and the citizens of our area have the utmost confidence in the DuPont Company and the Department of Energy's operation of the Savannah River Plant including the restart of L-Reactor.

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Jackson urges all agencies both state and national to reach a prompt agreement so that the restart of L-Reactor will not be delayed beyond the scheduled startup date.

Mayor

Robert T. Mounter
Councilman

Councilman

Councilman

Councilman

James F. Polatty
Councilman

Henry R. Bauers Jr.
Councilman

Attest: Myrle Long
City Clerk

City of New Ellenton
200 Main Street, Drawer 459
NEW ELLENTON, S. C. 29809

Mayor
GENE WHITMAN
Clerk-Treasurer
LYNN JEANCAKE

The Atomic City

Councilmen:
WALLACE BROCK
KEITH HARRIS
CHICK KEY
RAYMOND SEIGLER
TONY TEMPLE
TOM WINGO

RECEIVED
ARMED SERVICES
COMMITTEE
1983 JAN 31 AM 11: 49

January 24, 1983

The Honorable J. Storm Thurmond
United States Senator
211 York Street
Aiken, SC 29801

Dear Sir:

The City Council and I are concerned about the opposition to the restarting of the L-Reactor at SRP. Therefore, we have adopted the attached resolution asking that the Environmental Impact Statement not be required before the reactor is restarted as we feel this is vital not only to the economy of our city and county, but also to the defense of our country.

We are proud to support your fine endeavors as Chairman of the Armed Services Committee and wish you continued success in your future goals.

Sincerely,

Gene Whitman

Gene Whitman, Mayor
City of New Ellenton

/lj

City of New Ellenton
200 Main Street, P.O. Drawer 479
NEW ELLENTON, S. C. 29809

Mayor
GENE WHITMAN
Clerk-Treasurer
LYNN JEANCAKE

The Atomic City

Councilmen:
WALLACE BROCK
KEITH HARRIS
CHICK KEY
RAYMOND SEIGLER
TONY TEMPLE
TOM WINGO

RECEIVED
SENATE ARMED SERVICES
COMMITTEE
1983 JAN 31 AM 11: 50

RESOLUTION
OF
NEW ELLENTON CITY COUNCIL

on

Restart of L-Reactor at the Savannah River Plant
January 24, 1983

WHEREAS, The Department of Defense and the Federal Government have determined that the restart of L-Reactor is vital to our national defense and a major delay in restart could endanger our nation's security, and

WHEREAS, the L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968, and

WHEREAS, The DuPont Company in conjunction with the Department of Energy has operated the Savannah River Plant including three other Reactors in a safe and efficient manner, and the citizens of our area have the utmost confidence in the DuPont Company and the Department of Energy's operation of the Savannah River Plant including the restart of L-Reactor.

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of New Ellenton urges all agencies both state and national to reach a prompt agreement so that the restart of L-Reactor will not be delayed beyond the scheduled startup date.

Gene Whitman
Mayor

Tony J. Temple
Councilman

Wallace T. Brock
Councilman

Charles E. Key
Councilman

W. R. Seigler
Councilman

Keith W. Harris
Councilman

Lynn A. Jeancake
City Clerk

RECEIVED
SENATE ARMED SERVICES
COMMITTEE

1983 JAN 31 AM 11:50

BOARD OF COMMISSIONERS

ROOM 805 • CITY-COUNTY MUNICIPAL BLDG. (11)
AUGUSTA, GEORGIA 30911
(404) 828-6700

BILL WILLIAMS
Chairman

TOM TINLEY
Vice-Chairman

LARRY COLET
RICHARD JACK MILES
JACK PADGETT, JR.

DAYTON L. SHERROUSE
County Administrator

ROBERT C. DANIEL, JR.
County Attorney

January 27, 1983

The Honorable Strom Thurmond, Chairman
Senate Armed Services Committee
Russell Senate Office Building
Washington, D. C. 20510

Attention: Mr. Jim Smith

Dear Mr. Smith:

Enclosed is a resolution approved by the Richmond County Board of Commissioners on January 25, 1983 endorsing the re-start of the L-Reactor at the Savannah River Plant. Please see that this resolution is entered on the records of any committee hearings which may be held.

If I can be of further assistance in this regard, please feel free to contact me.

Sincerely yours,

Dayton L. Sherrouse

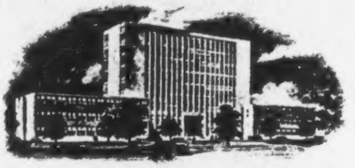
Dayton L. Sherrouse
County Administrator

Encl:

DLS:bn

OFFICE OF THE COMMISSIONERS

The County Of Richmond



Resolution

WHEREAS, the Department of Defense and the Federal Government have determined that the restart of L-Reactor is vital to our national defense, and a major delay in restart could endanger our nation's security; and

WHEREAS, the L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968; and

WHEREAS, the Savannah River Plant has operated in a safe and efficient manner, and the citizens of our area have the utmost confidence in the operation of the Savannah River Plant, including the restart of L-Reactor.

NOW, THEREFORE BE IT RESOLVED that the Board of Commissioners of Richmond County, Georgia, urges all agencies, both State and National, to reach a prompt agreement so that the restart of L-Reactor will not be delayed beyond the scheduled startup date.

ADOPTED, this 25th day of January, 1983.

Bill Wall
CHAIRMAN, BOARD OF COMMISSIONERS

Zack Miles
COUNTY COMMISSIONER

Larry B. Colet
COUNTY COMMISSIONER

Tom
COUNTY COMMISSIONER

COUNTY COMMISSIONER

ATTEST:

Dayton L. Sherrouse
COUNTY ADMINISTRATOR

Robert C. Daniel Jr.
COUNTY ATTORNEY

FEB 03 1983

House of Representatives

State of South Carolina

Bill Campbell
District No. 72-Richland County
Home Address:
1823 Heyward Street
Columbia, S.C. 29205
Telephones:
Bus. 252-7130
Res. 799-4272

Committees:
Ways and Means
Rules
Joint Bond Review

January 27, 1983

Senator Strom Thurmond
Committee on Armed Services
United States Senate
SR 222
Washington, DC 20510

Dear Senator Thurmond:

I am writing in lieu of an appearance to testify at your February 9th hearings in North Augusta to investigate environmental impacts of the proposed restart of the Savannah River Plant's L-Reactor. I would appreciate your including these comments in the official record of those hearings.

As you may know, the South Carolina House of Representatives passed a resolution backing Governor Riley and Attorney General Medlock, who have joined in a lawsuit seeking to force the Department of Energy (DOE) to prepare an Environmental Impact Statement (EIS) for the restart, as required by the National Environmental Policy Act. This resolution passed 74-27, and has been sent to the Senate for action. As a co-sponsor of the resolution, I remain convinced that DOE has acted illegally in refusing to prepare an EIS.

Among the impacts which our State will suffer, predicted by DOE's own document, an Environmental Assessment, are:

...discharges of 174°F cooling water into Steel Creek at a rate of 176,000 gallons per minute; this particular "impact" is contrary to State water quality laws, and S.C.'s DHEC is threatening to bring their own lawsuit to force compliance;

...flushing of 46 curies of cesium into the Savannah River; DOE's claims that this amount is insignificant are not reassuring, especially given EPA's assertion that "It is generally accepted that no threshold can be assumed for health effects due to radiation exposure; therefore, the perspective that must govern discharges of these materials to the environment is that all doses which accrue to exposed populations result in some increment of risk to these populations." ("Environmental Radiation Dose Commitment: An Application to the Nuclear Power Industry," February, 1974, EPA-520/4-73-002)

...withdrawal of up to 25% of Savannah River flow;

...destruction of some 1000 acres of wetlands; an October, 1982 SRP Ecology Lab report entitled "An Evaluation of the Steel Creek Ecosystem in Relation to the Proposed Restart of the L-Reactor" summarizes: "The impact of L reactor restart on the Steel Creek ecosystem will be substantial if no mitigative measures are taken." There is further analysis of possible problems with so-called "tree-kill": "Whatever the actual process of tree-kill, it is apparent that the zone of tree-kill is encroaching further into the swamp as existing trees die...As the swamp becomes increasingly defoliated, it may not continue to be possible to cool the reactor effluents to levels that meet required standards at the Savannah River...An historical survey of the impacts of of the reactor discharges into the swamp tributary streams... revealed that canopy degradation proceeded more rapidly in the Steel Creek delta than in the deltas of the other streams."

There are many questions raised by SRP's Environmental Assessment, and areas of concern which are not addressed in this document and should be. For example, alternatives to the proposed action, cumulative impacts on the environment of the total SRP activities, and assessment of the need for the proposed action are not sufficiently discussed.

It is the opinion of the House of Representatives, as expressed in the resolution passed yesterday, that the Environmental Assessment raised more questions than it answered, and that an Environmental Impact Statement is needed to address our legitimate concerns. Indeed, there seems to be no reasonable defense for the refusal to prepare an EIS. The L-reactor proposal involves the restart of an old reactor (something which has never before been done in the United States) which has never been the subject of an EIS and is not subject to regulation by the NRC. In addition, the L-reactor has no containment dome or cooling towers and is larger than one-fourth of the commercial power plants in the U.S. To say that the proposal is not "significant" is obviously incredible. The Department of Energy is breaking a federal law, and exhibiting a total disregard for the concerns of citizens of South Carolina.

I urge you and your Committee to call for an Environmental Impact Statement. It is essential that the impacts be fully determined prior to the polling of public sentiment. Without an Environmental Impact Statement, this nation appears to embark on a course determined by guesswork and, in the eyes of many, a deliberate attempt to keep the facts from the public.

Sincerely,

Bill Campbell

BC/rr
6]36 & 3906

28 January 1983

Dear Senator Thurmond:

Enclosed is a copy of a letter sent to Gov. Riley last month.

It expresses the sentiments on the L-Reactor startup. by the Barnwell County Chamber of Commerce, its' board of directors and membership.

Please include this letter in the official records for the February 9th Senate Armed Services Committee hearing.

With warm personal regards,

H Drew Wilder

Drew Wilder, President
Barn. Co. Chamber of Commerce

HDW/jb

BARNWELL CO. CHAMBER OF COMMERCE,
INDUSTRIAL DEVELOPMENT COMMISSION
P. O. BOX 898
BARNWELL, SOUTH CAROLINA 29812
259-7446

December 21, 1982

The Honorable Richard W. Riley
Governor of South Carolina
Post Office Box 11450
Columbia, South Carolina 29211

Re: Support for L-Reactor Startup without Environmental
Impact Statement

Dear Governor Riley:

The Department of Energy, under the authorization of the President, has been preparing the L-Reactor at the Savannah River Plant for startup as scheduled in 1983 to meet present national defense needs. However, litigation against the Department of Energy, et al, has been initiated by organizations and individuals to prevent the startup of the reactor without a full Environmental Impact Statement. This will unnecessarily delay startup of the Reactor by several years and will cost several million dollars. Based on the Environmental Assessment that has been performed for the Department of Energy, the adverse environmental impact, if any, is shown to be insignificant. Therefore, we request that you publicly support the startup of the L-Reactor without a full Environmental Impact Statement and that the State does not join in the litigation seeking to halt the startup and operation of the L-Reactor.

The Environmental Assessment was performed to meet the requirements of the National Environmental Policy Act of 1969, to determine if the more extensive Environmental Impact Statement would be required. The Environmental Assessment was based on the past actual operating experience not only of this reactor but also of three (3) other similar reactors which are now operating at the Savannah River Plant without significant environmental impact. The Study also took account of the extensive studies and expertise at the Savannah River Plant which is recognized around the world as to radionuclide release, transport, deposit, resuspension and dispersion. On the basis of these studies, the Environmental Assessment shows that the more extensive Environmental Impact Statement is not needed.

Thus we believe that the environmental impact of starting the L-Reactor is insignificant. This position is supported by: (1) the past safe operating experience of the Savannah River Plant and the L-Reactor in particular without significant (almost indiscernible) environmental impact; (2) the present very low environmental impact of the three reactors presently operating at the Savannah River Plant and (3) the results of the studies that are based on years and years of expertise and data in predicting, and then verifying by monitoring, the doses which the population would receive from nuclear facilities.

We have not mentioned the significant beneficial impact that the startup and operation of the reactor would have on the economic recovery of this region, the State, and the Nation from the problems which we now face. Further, if we were not fully convinced as to the safety and insignificant environmental impact of this operation on us, our families and our fellow citizens, we would not support and propose its early startup and operation. We sincerely believe that the startup of the L-Reactor on the basis proposed by DOE is in the best interest of the citizens of this area and the citizens of the Lower Savannah Region as well as the citizens of the State of South Carolina.

Respectfully submitted,

Barnwell County Chamber of Commerce
and Industrial Development Commission

By: /s/ Drew Wilder
H. Drew Wilder, President

F. W. BOONE,
Williston, S.C., January 28, 1983.

Senator STROM THURMOND,
Chairman, Armed Services Committee
Washington, D.C.

DEAR SENATOR THURMOND: Although I hesitate to request taking your time at the February 9 public hearing concerned with startup of the L Area reactor at the Savannah River Plant, I would appreciate your incorporating the following into the public record.

For the past 28 years I have been actively engaged in the profession of environmental evalution and control. For the past 10 years I have conducted, supervised and coordinated environmental studies in the vicinity of the Savannah River Plant on behalf of Allied-General Nuclear Services (located adjacent to the SRP site) and in cooperation with a university based environmental consulting team. During this time I have reviewed many studies in the area conducted by other independent groups (such as the State Department of Health and Environmental Control and the S. R. Ecology Lab) as well as those performed by SRP personnel, whose professional compentency and integrity have proven to be outstanding.

On the basis of all of my experience and observations to date, I can and do state unequivocally that there is no rational basis for concern regarding the adequacy of SRP conducted environmental impact studies relative to reactivation of the L Area reactor and their ongoing environmental surveillance program. Their personnel and programs are some of the best in the world. To suggest that there is a need for review of their work by others is comparable to sending in a troop of Boy Scouts to evaluate the U.S. Marines. We have the first team in place. Why burden them with long and expensive delays. If the product of the L Area reactor is needed for national defense purposes, then let us encourage the best qualified people available to get on with the job.

Sincerely,

F. W. BOONE.

RESOLUTION

STATE OF SOUTH CAROLINA, COUNTY OF SALUDA

RESOLUTION ON RESTART OF L-REACTOR AT THE SAVANNAH RIVER PLANT

Be it known that the restart of L-Reactor is vital to the national defense and a major delay in restart could endanger our nation's security; and

Be it known that L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968; and

Be it known that the impact of L-Reactor operations on the streams of the Savannah River Plant and on the Savannah River has been demonstrated and the consequences are known to have had negligible effects on human health and safety and had inflicted no permanent damage to the environment;

Now, therefore, be it known that the Saluda County Council urges the various governmental offices and agencies to reach prompt agreement so that the restart of L-Reactor will not be delayed beyond its scheduled date.

Adopted this 14th day of February, 1983.

SALUDA COUNTY COUNCIL
ALFRED B. COLEMAN
Chairman.

Attest:

SHIRLEY P. BOONE,
Clerk.

AMERICAN LEGION AUXILIARY,
Williston, S.C., January 26, 1983.

Hon. J. STROM THURMOND,
U.S. Senator,
Washington, D.C.
(Attention of Mr. Jim Smith)

DEAR SENATOR THURMOND: I respectfully request permission for a member of the American Legion Auxiliary, Unit No. 75, Williston, S.C. to be heard at the Armed

Services Hearings to be held on February 9, 1983 in North Augusta, S.C. regarding the opening of the L-Reactor at the Savannah River Plant.

Attached is a copy of our letter written to the Honorable Governor Dicky Riley on January 13, 1983. This letter was approved and a resolution passed at out January 13, 1983 monthly meeting.

Sincerely,

MRS. MARY H. COTHRAN,
President.

AMERICAN LEGION AUXILIARY,
Williston, S.C., January 13, 1983.

Hon. Governor DICK RILEY,
Richland Street,
Columbia, S.C.

DEAR GOVERNOR RILEY: We believe that the depressed economic conditions warrant the opening of the L Reactor at the Savannah River Plant. Not just for the sake of providing jobs for the unemployment segment of society, but for the sake of our own national security.

In behalf of the American Legion Auxiliary, Unit No. 75, Williston, South Carolina, I am writing this bequest to you and your authorities. Unit No. 75 represents 55 ladies who are located in the Savannah River Plant area. We are aware of the national security of our country . . . we are aware of our national defense . . . we are aware that America is not on par with Russia in the military. We believe the way to have peace is to prepare a strong national defense.

We implore you to take these thoughts into careful and deliberate consideration before you issue an ultimatum.

Yours for God and Country,

MRS. MARY COTHRAN,
President.

AMERICAN LEGION AUXILIARY UNIT NO. 75, WILLISTON, S.C.

Whereas, the Department of Defense and the Federal Government have determined that the restart of L-Reactor is vital to our national defense, and a major delay in restart could endanger our nation's security; and

Whereas, two Presidents have endorsed reopening the L-Reactor; and

Whereas, the Savannah River Plant has operated safely, and the citizens of our area have the utmost confidence in the operation of the Savannah River Plant, including the restart of L-Reactor.

Now, therefore be it resolved that the American Legion Auxiliary, Unit No. 75, Williston, South Carolina, urges all agencies, both State and National, to reach a prompt agreement so that the restart of L-Reactor will not be delayed beyond the scheduled startup date.

Adopted, this 13th day of January 1983.

MRS. MARY COTHRAN,
President.

ENCLOSURES SUBMITTED FOR THE HEARING RECORD

Enclosure No. 1

STATEMENT BY SENATOR STROM THURMOND (R-S.C.) REFERENCE SENATE ARMED SERVICES COMMITTEE HEARING ON THE L-REACTOR, NORTH AUGUSTA, SOUTH CAROLINA, NORTH AUGUSTA HIGH SCHOOL GYMNASIUM. FEBRUARY 9, 1983, 12:00 NOON.

LADIES AND GENTLEMEN, MEMBERS OF THE MEDIA, AND MY MANY FRIENDS FROM SOUTH CAROLINA AND GEORGIA:

IT IS A GREAT PLEASURE FOR ME TO BE HERE TODAY IN THIS FINE FACILITY, WHICH HAS BEEN SO GRACIOUSLY MADE AVAILABLE, SO THAT WE CAN DISCUSS A MATTER WHICH IS OF GREAT CONCERN TO MANY PEOPLE IN THE SAVANNAH RIVER PLANT AREA -- FROM AUGUSTA TO SAVANNAH ON THE GEORGIA SIDE AND FROM AIKEN TO BEAUFORT ON THE SOUTH CAROLINA SIDE.

THIS IS A HEARING OF THE SENATE COMMITTEE ON ARMED SERVICES. AT MY REQUEST, THE COMMITTEE CHAIRMAN, SENATOR JOHN TOWER OF TEXAS, AGREED TO SCHEDULE THIS FIELD HEARING. SENATOR TOWER HIMSELF IS PRESENTLY IN EUROPE MEETING WITH OUR ALLIES ON NATIONAL DEFENSE MATTERS, AND HE HAS ASKED ME, AS THE RANKING MAJORITY MEMBER, TO CHAIR THIS HEARING. PARTICIPATING WITH ME IS THE DISTINGUISHED SENATOR FROM GEORGIA, SENATOR MACK MATTINGLY, A MEMBER OF THE SENATE APPROPRIATIONS COMMITTEE, AND I AM DELIGHTED THAT HE COULD BE WITH US HERE TODAY.

LET ME MAKE A FEW COMMENTS TO SET THE STAGE FOR THIS HEARING.

THE SAVANNAH RIVER PLANT IS VITAL TO OUR NATIONAL DEFENSE.

AS ALL OF YOU HERE TODAY ARE AWARE, OUR NUCLEAR WEAPONS SPECIALISTS HAVE DETERMINED THAT THE L-REACTOR AT SAVANNAH RIVER MUST BE RESTARTED IN ORDER TO ATTAIN THE LEVELS OF DEFENSE NUCLEAR MATERIAL ESTABLISHED BY THE PRESIDENT. IN TERMS OF BOTH COST AND TIME NEEDED TO UPGRADE AND PREPARE AN OLDER REACTOR FOR OPERATION, THE L-REACTOR PRESENTS THE BEST ALTERNATIVE FOR PRODUCING THESE MATERIALS. THE L-REACTOR ORIGINALLY BEGAN OPERATION IN 1955 AND WAS PLACED ON STANDBY STATUS IN 1968. THE PROPOSED REACTIVATION OF THE L-REACTOR IS CURRENTLY SCHEDULED FOR OCTOBER, 1983. BOTH PRESIDENTS CARTER AND REAGAN HAVE CALLED FOR PREPARATIONS TO BE ABLE TO RESTART THE L-REACTOR, AND THE CONGRESS HAS APPROVED SPENDING OF SOME $200 MILLION TO UPGRADE THE REACTOR AND GET IT READY TO RESTART. SENATOR MATTINGLY AND I WERE ABLE TO VISIT THE REACTOR THIS MORNING FOR A BRIEFING ON THIS PROPOSED RESTART.

A NUMBER OF ENVIRONMENTAL CONCERNS HAVE BEEN RAISED, HOWEVER, REGARDING THE REACTIVATION OF THE L-REACTOR. THE AIRING OF THOSE CONCERNS, WHICH RANGE FROM THERMAL POLLUTION TO THE FLUSHING OF RADIOACTIVE CESIUM INTO THE SAVANNAH RIVER, IS THE PURPOSE OF OUR HEARING HERE TODAY. PARTICIPANTS SHOULD CONFINE THEIR TESTIMONY TO THESE CONCERNS; WE ARE NOT HERE TO GET INTO A GENERAL DEBATE ON NUCLEAR WEAPONS. THE ENERGY DEPARTMENT, IN PREPARATION FOR THE RESTART, PREPARED AN ENVIRONMENTAL ASSESSMENT IN COMPLIANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT. AS A RESULT OF THAT ASSESSMENT, THE DEPARTMENT ISSUED A FINDING THAT THE RESTART WOULD NOT SIGNIFICANTLY IMPACT THE ENVIRONMENT. MANY HAVE TAKEN ISSUE WITH THAT FINDING, INCLUDING SEVERAL STATE OFFICIALS. TODAY WE WANT TO HEAR FROM EXPERTS ON THIS SUBJECT AND FROM INTERESTED PARTIES ON BOTH SIDES IN AN ATTEMPT TO GIVE THE PUBLIC AN OPPORTUNITY TO EXPRESS THEIR CONCERNS RELATIVE TO THE POSSIBLE ENVIRONMENTAL IMPACTS OF THE RESTART.

I AM PLEASED TO PROVIDE THIS OPPORTUNITY FOR THE PEOPLE OF SOUTH CAROLINA AND GEORGIA TO EXPRESS THEIR VIEWS WITH REGARD TO THE ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED RESTART OF THE L-REACTOR. WHILE THE REACTOR IS OF CRITICAL IMPORTANCE TO OUR GOAL OF INCREASED PRODUCTION OF ADDITIONAL DEFENSE MATERIALS, WE MUST NEVER TAKE CHANCES WITH THE PUBLIC'S HEALTH AND SAFETY AND THE INTEGRITY OF OUR ENVIRONMENT AND DRINKING WATER. THE STATE OF SOUTH CAROLINA HAS BEEN A GRACIOUS HOST TO THE SAVANNAH RIVER PLANT SINCE ITS INCEPTION. OUR CITIZENS HAVE BEEN PLEASED TO MAKE A CONTRIBUTION TO THE NATIONAL SECURITY OF OUR COUNTRY. AT THE SAME TIME, THE SAVANNAH RIVER PLANT HAS BEEN OF TREMENDOUS BENEFIT TO THE ECONOMY OF OUR STATE. MANY DO NOT REALIZE IT, BUT THIS FACILITY IS THE LARGEST SINGLE EMPLOYER IN SOUTH CAROLINA. WHEN NEW ACTIVITIES AT SAVANNAH RIVER PLANT ARE PROPOSED, HOWEVER, THE PEOPLE OF OUR STATE AND THE REGION DESERVE TO HAVE THEIR UNDERSTANDABLE CONCERNS THOROUGHLY AIRED AND ADDRESSED.

IN SETTING UP THIS HEARING, I ANNOUNCED IN THE PRESS THE GENERAL DETAILS OF THE HEARING AND ASKED FOR ALL INTERESTED PARTIES TO NOTIFY ME IN WRITING BY JANUARY 28, 1983 IF THEY WANTED TO APPEAR. ATTACHED TO MY STATEMENT IS A LIST OF THE NEWSPAPERS WHICH CARRIED MY ANNOUNCEMENT OF THE HEARING. WE HAVE RECEIVED REQUESTS TO PARTICIPATE IN THE HEARING AND ADDITIONAL LETTERS OR PETITIONS FOR INSERTION IN THE HEARING RECORD.

WE ARE GOING TO MAKE EVERY ATTEMPT TO HEAR AS MANY OF YOU THAT HAVE ASKED TO TESTIFY AS POSSIBLE. THE FOLLOWING GENERAL AGENDA WILL APPLY:

- WE WILL FIRST HEAR FROM GOVERNMENT OFFICIALS -- THE ENERGY DEPARTMENT, THE ENVIRONMENTAL PROTECTION AGENCY, AND ELECTED OFFICIALS.
- THEN WE WILL TURN TO THOSE WHO HAVE ASKED TO PARTICIPATE.

To keep the hearing balanced, I have elected to put together two lists. One list includes those supporting the L-Reactor restart, the other list includes those concerned about the L-Reactor restart. We will alternate between lists to be sure that both sides get equal time.

- Finally, we will wrap up with summary testimont by Mr. Bob Morgan from the Savannah River Plant.

Let me emphasize that we have a very large number of witnesses. I want to accommodate as many as we possibly can. So please be brief. Your prepared statement will go in the public record, you are encouraged to summarize the key points. If a point has been made by an earlier witness, you need not repeat the same point if it is in your prepared statement. The main reason for the hearing is to be sure all the different points are brought out. You have all been advised as to the time you will have to present your testimony. I hope you will try to cut that time in half, so that we may hear from the maximum number of people. If time gets away from us, we may not get to everyone on the agenda. If we do not get to you, your statement will be included in the public record.

Before we begin, let me publicly thank some of the key officials who made this hearing possible:

-Principal James Martin and Assistant Principal John Bell here at the North Augusta High School have made this fine facility available. They also fed us in the school cafeteria and I must remark that the food has improved since I went to high school.

-The Army at Fort Gordon has handled many of the logistical arrangements --the speaker system, the stenographer, and many of the details necessary to put a hearing like this together. Major Cleve Rowley has served as the project officer, and we all thank you, Major Rowley.

-Mr. Water E. Newman, the Director of Public Safety here in North Augusta, has been most cooperative in handling parking and ensuring that we have uniformed policemen to help.

There are, of course, many others and I have not time to name them all, but we do thank each of you.

(Defer to Senator Mattingly for comment).

NEWSPAPER LISTING

1. Charleston News & Courier - 1-8-83
2. Columbia Record - 1-8-83
   Columbia State - 1-9-83
3. Aiken Standard - 1-10-83
4. Augusta Chronicle - 1-8-83
5. Beaufort Gazette - 1-14-83 and 1-25-83

Enclosure No. 2

United States Senate
COMMITTEE ON ARMED SERVICES
WASHINGTON, D.C. 20510

December 8, 1982

Honorable Anne Gorsuch
Administrator
Environmental Protection Agency
Washington, D.C. 20460

Dear Ms. Gorsuch:

I am concerned that the environmental interests of the people of South Carolina be properly safeguarded with respect to the restart of the L-Reactor at the Savannah River Plant, Aiken, South Carolina. There have been recent press accounts suggesting that the Department of Energy is not complying with the requirements of the National Environmental Policy Act with regard to the proposed Federal action.

I would be deeply grateful if you would conduct an independent analysis of the actions taken by the Department of Energy to date with regard to the restart of the L-Reactor. Specifically, I would like your views on the following questions:

1. Has the Department of Energy complied with the National Environmental Policy Act and the appropriate implementing regulations with respect to their environmental analyses to date?

2. In your view, are adequate precautions being planned in connection with the restart of the L-Reactor to protect the environmental interests of the people in the South Carolina-Georgia vicinity of the plant? I am particularly concerned with the potential impact on the Savannah River water quality and associated marine and wildlife.

I would hope that you could provide me your views by January 31, 1983. Thank you for your prompt attention to this matter.

Sincerely,

/s/

Strom Thurmond

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 28 1983

THE ADMINISTRATOR

Honorable Strom Thurmond
United States Senate
Washington, D.C. 20510

Dear Senator Thurmond:

Thank you for your letter of December 8, 1983, on the restart of the L-Reactor at the Savannah River Plant, Aiken, South Carolina. Following your request, we have made an analysis of the action taken by the Department of Energy (DOE) in regard to this proposed Federal project.

First, concerning your request for EPA's views on the environmental consequences of the restart of the L-Reactor, I would like to discuss each of six areas of environmental impact individually. The first is the impact of routine radioactive releases on the water in the plant area. Since there are three reactors similar in design to the L-Reactor now in operation in this area, it is very unlikely that the restart of a fourth reactor would substantially increase adverse environmental impacts resulting from increased radioactive releases. The routine discharges of tritium to the river have been and will continue to be monitored. Based on monitoring data and other information supplied through DOE, the amount of radioactive tritium in the water supplies will increase over present levels. The resulting level, it is estimated, will amount to an average of 2,500 or 3,000 picocuries per liter, far below EPA's drinking water standard of 20,000 picocuries per liter. EPA's knowledge of other reactors also indicates that there is no significant environmental hazard from routine radiological releases.

The resuspension of sediments containing some radioactive materials is a second, related question. Some sediment with radioactive cesium will be resuspended and released into the Savannah River. EPA agrees with the Department of Energy's view that cesium will remain chemically bound in the stream or river sediments. Contaminated sediment could move down river through a repeated process of deposition and resuspension. However, the monitoring data suggests that this process is not likely to result in the presence of detectable radioactive cesium in the water supplies of Beaufort-Jasper or Port Wentworth. Most of the cesium would be deposited in the swamp adjacent to the Savannah River Plant. EPA believes there will be no significant environmental hazard from this release.

A third environmental impact discussed in DOE's assessment is the withdrawal of water from the river for reactor cooling. Currently, the Savannah River Plant uses about 456 million gallons of water per day. This withdrawal represents about 7% of the average Savannah River flow. With the restarting of the L-Reactor, an additional 251 million gallons per day of cooling water will be needed. This will result in a total withdrawal of approximately 13% of the River's average flow. These water withdrawals would involve some impingement, or entrainment, of fish, fish eggs, larvae, and other aquatic organisms. We do not believe the impingement, or entrainment, would be significant.

Fourth, the liquid discharges from the L-Reactor to Steel Creek and the river are subject to a permit issued under the NPDES program which has been delegated to South Carolina by EPA. This permit process can establish operating conditions such as requiring sufficient precautions to protect the environment. Since negotiations between the State and DOE concerning this permit and its conditions are underway, I do not feel it is appropriate for EPA as the delegating Agency to publicly comment on this issue, at this time.

Fifth, one of the possible environmental impacts of the proposed thermal discharges will be the impact on certain wetlands in the area. The assessment indicates that the amount of wetlands affected in some degree will approximate a thousand acres (580 acres along Steel Creek and 420 acres along the swamps bordering the river). These wetlands are still impacted as a result of prior operation of the L-Reactor from 1954 to 1968, but there has been some return to earlier conditions since the L-Reactor was placed in a "stand-by" status. If no steps are taken to minimize the impacts of these thermal discharges, hot water would eliminate or impair wildlife and vegetative forms which have started to reappear in this area during the "stand-by" period. The hot water would return the area to its pre-1968 condition.

An additional impact discussed in the Environmental Assessment is the L-Reactor's impact on groundwater underlying the site. According to the Assessment the L-Reactor will discharge wastewater into a presently dry, nearby seepage basin. Supporting facilities would also discharge wastewater into seepage basins. The plant has an extensive groundwater monitoring network and all seepage basins are closely monitored. The plant staff is preparing a comprehensive hydrogeological report to identify existing groundwater problems and propose remedial actions. From this we see that groundwater contamination impacts are being carefully evaluated and appropriate mitigative measures are in the planning stages.

We are also aware of programs of the State of South Carolina and the State of Georgia that concern the Savannah River Plant. The South Carolina Department of Health and Environmental Control (SCDHEC) and the Georgia Department of Natural Resources (GADNR) monitor both the air and water in the surrounding area as well as downstream of the facility. The river is monitored once a month as part of a state-wide surveillance program. The analytical methods used detect radiological contaminants and the associated concentrations. South Carolina plans to monitor the river more frequently once the L-Reactor goes on-line to determine the additional radiological impacts associated with its operation. The results of these monitoring programs are published annually in enviromental surveillance reports that can be obtained upon request. In addition to the radiological surveillance programs, the States also have primary authority for their drinking water supplies in accordance with EPA regulations.

As to your procedural inquiry, the Department of Energy's Environmental Assessment on the restart of the L-Reactor is a comprehensive document which sets forth a detailed discussion of the expected environmental effects of the proposed project, including a comparison of the anticipated impacts of the post-1984 operation with the environmental impacts of the pre-1968 operation, and indicates no net increase in environmental effects between the two. The Environmental Assessment provides a sufficient basis for the Department of Energy's decision that it was not necessary to prepare an Environmental Impact Statement, particularly in light of the fact that this is a restart operation. Therefore, the Environmental Protection Agency does not question the Department's conclusion that its procedures comply with the pertinent statutory provisions of the National Environmental Policy Act and with regulations issued pursuant to the Act.

I can assure you that we have followed this project very closely from the time the DOE assessment was issued in August 1982. Charles Jeter, our Regional Administrator in Atlanta, Paul Cahill, the Director of EPA's Office of Federal Activities, and Glen Sjoblom, the Director of EPA's Office of Radiation Programs, are maintaining surveillance of this project for EPA. Mr. Jeter has also met with State and DOE officials to discuss this project. I appreciate the opportunity to express EPA's views and I hope I have responded satisfactorily to your questions. If EPA can assist you further in this matter, please let me know.

Sincerely yours,

Anne M. Gorsuch

cc: A. Alan Hill, Chairman
Council on Environmental Quality

Enclosure No. 3

STATEMENT OF
TROY E. WADE
PRINCIPAL DEPUTY ASSISTANT SECRETARY
FOR DEFENSE PROGRAMS
UNITED STATES DEPARTMENT OF ENERGY

BEFORE THE

ARMED SERVICES COMMITTEE
UNITED STATES SENATE

FEBRUARY 9, 1983

STATEMENT OF TROY E. WADE
PRINCIPAL DEPUTY ASSISTANT SECRETARY
FOR
DEFENSE PROGRAMS
UNITED STATES DEPARTMENT OF ENERGY

Mr. Chairman and members of the Committee, I am pleased to be here today to testify on behalf of the Department of Energy (DOE) concerning the Department's plans and actions in preparation for the restart of the L Reactor at the Savannah River Plant. I wish to thank you for scheduling this public hearing which should promote an improved understanding among all parties having an interest in or concern about L Reactor restart. I will address the need and importance of the Savannah River Plant and particularly, the L Reactor, to the security and defense of this nation. Mr. Davies, the Deputy Assistant Secretary for Environment, Safety and Health, is present to answer questions on the Department's compliance with the National Environmental Policy Act (NEPA) process as it applies to the L Reactor. Later in the afternoon, Mr. Robert L. Morgan, Manager of the Department's Savannah River Operations Office will provide more detailed testimony on the L Reactor activities and the environmental effects of restarting the reactor.

DOE, through the Atomic Energy Act of 1954, as amended, is charged with the responsibility to produce all nuclear materials required for the United States weapons program. The Department works jointly with the Department of Defense to determine the material requirements to support the nuclear weapons program. These requirements are developed annually and are provided through the National Security Council to the President for approval. In accordance with the Atomic Energy Act, approval of these proposals by the President and subsequent authorization and appropriation by Congress constitutes the legal authority and mandate to the DOE for nuclear materials and weapons production.

One of the principal sites at which the Department produces nuclear materials for maintaining the nation's defense is the Savannah River Plant. Constructed for the United States Atomic Energy Commission in the early 1950's by du Pont, this facility employs approximately 10,000 people and provides the largest single payroll in South Carolina. The number of permanent employees on the site is expected to rise by at least 1000 in the next ten years while construction jobs will increase by several thousand during the same time period. Funding for the site was 728 million dollars in fiscal year 1982. It will increase to more than 850 million in fiscal year 1983 and to well over a billion dollars in fiscal year 1984. It is the largest producer of plutonium and the sole producer of tritium needed to maintain this nation's nuclear weapons stockpile. In addition, it produces nuclear material for medical, industrial, space, and research applications. These nuclear materials are currently being produced in three operating reactors on the site.

The Department determined that additional production capacity was needed to meet the requirements for nuclear materials approved by the President in October of 1980. These increased production needs stem largely from efforts to modernize the weapons in the stockpile and to meet the continual requirement for tritium which radioactively decays at a rate of about 5 percent per year. Among the options considered for increasing production were reactivation of reactors at the Hanford Reservation in Richland, Washington, and the L and R Reactors at the Savannah River Plant. The L Reactor was placed in standby status in 1968, after fourteen years of operation and the Department concluded that it was the only reactor which could be reactivated in sufficient time (October, 1983) to meet the production needs established by the President. Accordingly, pursuant to a supplemental appropriation passed by Congress in fiscal year 1981, a project was initiated to restore and upgrade L Reactor to permit startup as soon as practicable.

Since L Reactor was placed in standby in 1968, many modifications were made to improve the safety, environmental protection and operational efficiency of the three reactors currently operating at the Savannah River Plant. These improvements, in addition to the replacement of deteriorated and obsolete equipment, are being incorporated into L Reactor to bring it to a condition equivalent to that of the operating reactors.

This project was undertaken by the Department with the same high degree of concern for protection of the health and safety of the public, plant personnel and environment which has always been a fundamental element of our activities at the Savannah River Plant. This is evidenced, in part, by the extensive environmental protection and monitoring and safety activities which have been ongoing for many years at the Plant. For example, an extensive surveillance program has been continuously maintained since 1951, before the Savannah River Plant startup, to determine the concentrations of radionuclides in a 1200 square mile area surrounding the plant, and the radiation exposure of the population resulting from plant operations. This monitoring program is one of the largest of its type in the world and the results are reported annually to the public.

Each year, about 30,000 samples of air, water, vegetation, soil and foods are collected within a 125 mile radius of the Savannah River Plant. Over 90,000 separate analyses are conducted on these samples. This program has clearly established that the radiation dose from the Savannah River Plant to the population in the region, falls well within all applicable requirements. Furthermore, this dose is much less than one percent of the dose received from naturally occurring radiation by residents of the area. Methods to reduce releases of radioactivity at the plant are evaluated on a continuing basis, and release control equipment to improve environmental conditions has been incorporated based on this continuing process.

The safety features of the operating reactors have been continually upgraded over the years incorporating advances in technology such as the availability of reliable computers for reactor control and safety functions, utilizing experience and lessons learned from both commercial and defense reactor operating experience, and periodically revising the safety analyses of the reactors as improved technical data and calculational techniques became available. Activities initiated from the lessons learned as a result of the Three Mile Island incident, for example, include a major strengthening of the reactor operator training program, construction of a reactor simulator to support the training program, and upgrading of the facilities for remote detection and control of critical functions. The attainment of 115 reactor years of safe operation and the receipt in 1972 of the only "AEC's Best Ever" safety award for operation and construction of nuclear facilities provide evidence of the effectiveness of these activities.

The National Environmental Policy Act (NEPA) of 1969, as amended, established requirements on Federal agencies to consider the environmental impacts of their proposed actions. The Council on Environmental Quality (CEQ), created by the NEPA, promulgated 40 CFR 1500-1508, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act. The regulations are applicable to all Federal agencies.

In early fiscal year 1981, the Department initiated an extensive program of review, collection and analysis of data to determine the environmental effects which would result from resumed operation of the L Reactor. It was decided that it would be appropriate to prepare an Environmental Assessment utilizing this data to assess the significance of the potential environmental effects and determine the need for preparing an Environmental Impact Statement.

The Environmental Assessment on the restart of L Reactor issued in August of 1982 provides a comprehensive review of the anticipated environmental effects of the proposed resumption of operation of L Reactor. Unlike most environmental evaluations which are based on engineering designs and estimates of environmental impacts, the L Reactor Environmental Assessment utilized the data and experience gained from fourteen years of actual L Reactor operation. The principal areas of environmental effects during the 1954-1968 operating period were located on the Savannah River Plant site. The Department concluded that the resumption of L Reactor operation is expected to affect essentially the same areas previously affected.

In accordance with NEPA and the regulations of the CEQ the Assistant Secretary for Environmental Protection, Safety, and Emergency Preparedness at the DOE reached a Finding of No Significant Impact (FONSI) for the restart of L Reactor. This finding was based on the results of the analysis in the Environmental Assessment, which showed that foreseeable impacts from the resumption of L Reactor operation related to water quality, air quality, solid waste, and radiological dose to the public and the work force are expected to be somewhat less than those experienced during the 1954-1968 operating period. In all other respects, the analysis demonstrated that the differences in impacts expected to result from resumed operation and the previous operations are negligible. Considering the previous impacts in the area due to the operation of L Reactor from 1954 to 1968, and viewed in the context of the physical setting and current use of the Savannah River Plant Site, DOE found that the impacts resulting from the resumption of L Reactor operation should not be significant. The FONSI was published in the Federal Register (47 FR 36691) on August 23, 1982, together with a notice that the Environmental Assessment was available. To date, the Department has distributed about 600 copies of the Environmental Assessment to the public.

Since the publication of the Environmental Assessment, no new substantive issues have been raised which were not adequately addressed in the Environmental Assessment or which would affect the FONSI.

In summary, it is DOE's position that:

- Restart of the L Reactor by October, 1983, is needed to meet the defense requirements for nuclear materials approved by the President and Congress,

- Activities at the Savannah River Plant and preparations for resumption of L Reactor operation are being conducted in a manner which will assure protection of the environmental interests of the people of South Carolina and Georgia,
- The Department has complied with the requirements of the NEPA with respect to restart of L Reactor, and
- No new substantive issues have been raised which were not adequately addressed in the Environmental Assessment.

As I mentioned in the beginning of my statement, later in the afternoon Mr. Morgan will provide more detailed testimony on the L Reactor activities and the environmental effects of restarting the reactor.

This completes my presentation. I shall be happy to answer questions, and Mr. Robert W. Davies, Deputy Assistant Secretary for Environment, Safety and Health (DOE) is also available to answer questions.

Enclosure No. 4

Senate Armed Services Committee

Public Hearing

Restarting L-Reactor at Savannah River Plant

Testimony

R. L. Morgan, Manager
Savannah River Operations Office
U.S. Department of Energy

February 9, 1983
North Augusta Senior High School
North Augusta, South Carolina

Mr. Chairman and members of the Committee, I am pleased to be here today to testify on behalf of the Department of Energy (DOE) concerning the Department's plans and actions in preparation for the restart of the L-reactor at the Savannah River Plant. I wish to thank you and your Committee for scheduling these hearings which should promote an improved understanding among all parties having an interest or concern in L-Reactor restart. I will speak about the Savannah River Plant and particularly, the L-Reactor, and the potential environmental effects of its planned operations.

SAVANNAH RIVER PLANT

Mission

The Savannah River Plant (SRP) near Aiken, South Carolina, is a major installation of the U.S. Department of Energy (DOE) for the production of nuclear materials for national defense. SRP began operations in the early 1950s and is currently the primary source of reactor-produced defense materials. The primary missions of the SRP are listed below in Table 1.

Table 1. Primary Missions of the SRP

- PRODUCTION OF NUCLEAR MATERIALS
  - Tritium for weapons
  - Plutonium 239 for weapons
- LOADING AND RECYCLING OF WEAPONS COMPONENTS
  - Maintaining nuclear weapons stockpile
- PRODUCTION OF PLUTONIUM 238
  - Heat sources for thermal electric generators
- PRODUCTION OF TRANSPLUTONIUM ISOTOPES
  - Californium 252 for medical and industrial uses
  - Americium 241 for industrial uses
- ENERGY-RELATED ENVIRONMENTAL RESEARCH
  - Protected site and 30-year baseline
- NUCLEAR WASTE MANAGEMENT
  - Defense Waste Processing Facility
  - Management of national high-level program (defense)
  - SRP interim operations

The DOE, formerly the U.S. Atomic Energy Commission (AEC), selected the location of the SRP in November 1950 after studying more than 100 potential sites. Factors in the selection of the site included the low population density, the accessibility of a large cooling-water supply, and the freedom from floods and major storms. Construction began in February 1951, and the first reactor began operation in December 1953.

Facilities of the SRP include five nuclear production reactors (three currently operating), two chemical separation facilities, a fuel and target fabrication facility, a heavy-water production facility (on standby), waste management facilities, a low-level-waste burial ground, and various support facilities. In 1964 and 1968, two production reactors, R- and L-Reactor, respectively, were placed on standby status as a result of a decrease in the requirement for nuclear materials.

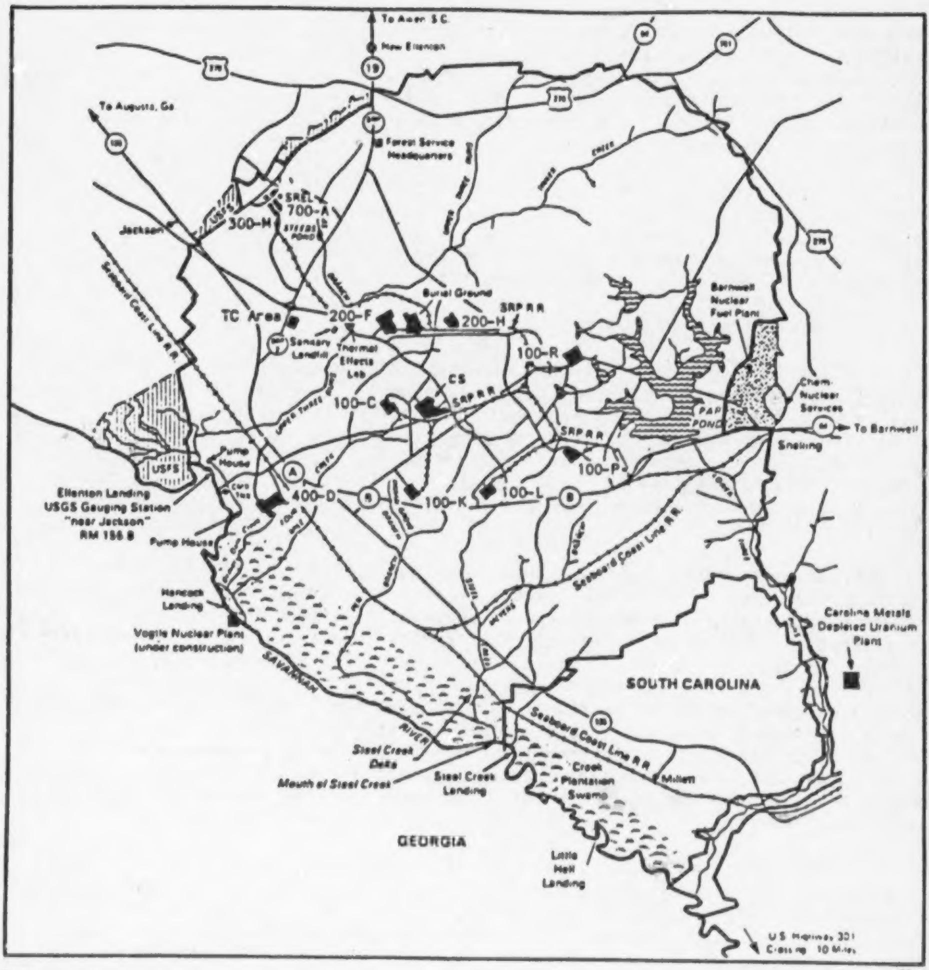
Other facilities are currently budgeted for the SRP. These are the Fuel Materials Facility, which will produce fuel materials for naval reactors, and the Defense Waste Processing Facility, which will convert SRP high-level liquid radioactive waste currently stored in underground tanks into borosilicate glass for disposal in a Federal geologic repository.

Description of Site and Facilities

The SRP is a 300-square-mile controlled-access area located in southwestern South Carolina about 25 miles southeast of Augusta, Georgia. Plant facilities, which may be characterized as heavy industry, occupy less than 5 percent of the plant site. The remainder of the site consists of pine and bottomland hardwood forests and native vegetation, reservoir and ponds, all of which support a diversity of wildlife habitats. Public access to the site is controlled; timber management activities, controlled deer hunts, and environmental studies are permitted.

Figure 1 indicates the major facilities associated with the SRP. The nuclear production reactors are located in the "100" Areas. Each of the two "200" Areas contains a chemical separation facility (i.e., an area in which irradiated materials are processed) and high-level-waste tanks. A solid radioactive waste burial ground is situated between the two separation areas. The "300-M" Area is a fuel and target fabrication plant that manufactures elements to be irradiated in the production reactors. The heavy-water production facility in the "400-D" Area was recently placed on standby status. The "700-A" Area includes both the Plant Administrative Area and the Savannah River Laboratory. In 1972, the SRP site was established as the nation's first National Environmental Research Park to study the potential environmental effects of a nuclear production complex.

The SRP site borders and is almost entirely drained by the Savannah River (Figure 1). The Savannah River is classified by the State of South Carolina as a Class B waterway downstream from Clarks Hill Dam, meaning that it is suitable for domestic use after treatment, for the propagation of fish, and for industrial and agricultural uses. The river upstream from the SRP supplies municipal water for Augusta, Georgia, and North Augusta, South Carolina. Downstream the Savannah River supplies the Beaufort-Jasper Water Treatment Plant, South Carolina, and the Cherokee Hill Water Treatment Plant, Port Wentworth, Georgia. The Savannah River receives sewage treatment effluents from the communities and industries of Augusta, Georgia, and North Augusta, Aiken, and Horse Creek Valley, South Carolina, and receives heated water and other waste discharges from the SRP via tributaries.


To Aiken S.C.
New Ellenton
19
278
To Augusta, Ga.
125
Forest Service Headquarters
SREL
700-A
USFS
300-M
Steeds Pond
Jackson
Seaboard Coast Line R.R.
TC Area
200-F
200-H
Burial Ground
SRP R.R.
Sanitary Landfill
Thermal Effects Lab
CS
100-C
100-R
100-P
100-K
100-L
400-D
A
B
Pump House
USFS
Ellenton Landing
USGS Gauging Station
"near Jackson"
RM 156.8
Pump House
Hancock Landing
Vogtle Nuclear Plant
(under construction)
SAVANNAH
RIVER
Steel Creek Delta
Mouth of Steel Creek
Steel Creek Landing
Creek Plantation Swamp
Little Hell Landing
GEORGIA
SOUTH CAROLINA
Millett
Barnwell Nuclear Fuel Plant
Chem-Nuclear Services
PAR POND
To Barnwell
Snelling
Caroline Metals Depleted Uranium Plant
U.S. Highway 301 Crossing 10 Miles
0
5
10 Miles

Key:

100-C,K,R,L,P	Reactor Areas (C,P,K are operating)
200-F,H	Separations Area
300-M	Fuel and Target Fabrication
400-D	Heavy Water Production (Standby)
700-A	Savannah River Laboratory and Administrative Area
SREL	SR Ecology Laboratory
USFS	United States Forest Service
CS	Central Shop
TC	Construction Administration Area

Currently, the SRP withdraws about 900 cubic feet per second from the Savannah River (which has an average flow of 10,400 cubic feet per second), primarily for cooling water used in nuclear reactors and coal-fired power plants. Most of the water withdrawn returns via streams draining the plant. The SRP site is drained almost entirely by six principal streams: (1) Upper Three Runs Creek, (2) Four Mile Creek, (3) Beaver Dam Creek, (4) Pen Branch, (5) Steel Creek, and (6) Lower Three Runs Creek.

A large forested swamp bordering the Savannah River receives the flow from Four Mile Creek, Beaver Dam Creek, Pen Branch, and Steel Creek. The onsite swamp borders the river for a distance of about 10 miles and averages about 1.5 miles in width. Its water discharges into the river through breaches in the natural river levee. During periods of flooding, river water overflows the levee and floods most of the swamp.

Four Mile Creek, Pen Branch, Steel Creek, and Lower Three Runs Creek, which all originate onsite, have received direct discharges of reactor cooling water. Most of the discharged heat is dissipated in the onsite creeks. Although effects on the Savannah River are small, the flow of hot water has altered the characteristics of these SRP streams and some areas of the swamp.

In addition to the surface streams, there are man-made impoundments on the SRP site, principally Par Pond, as well as about 200 shallow natural depressions called Carolina Bays.

SRP Monitoring Programs

The safety of the public near the SRP is a primary concern of SRP operations. Since 1951 (before the plant began operation), environmental characteristics have been measured at the plant and in its environs. The monitoring programs and results are described in published reports spanning the period from the late 1950s to the present, which are available to the public.

Radiological monitoring programs. The radiation-monitoring program includes the monitoring of the radionuclide content of air on and off the site, water from SRP streams, the Savannah River, wells, and drinking water supplies; and samples of soil, vegetation, milk, animals, and fish. Figure 2 indicates the continuous air-monitoring stations and public-water-sampling locations for the plant and the surrounding vicinity.

Distant air stations for the monitoring of background levels of radioactivity are located in Macon and Savannah, Georgia, and in Greenville and Columbia, South Carolina.

Seven vegetation-monitoring sites and six food sample (meat, milk, and fresh vegetables) monitoring sites are located along the SRP perimeter. Seven additional vegetation-monitoring sites and eight additional food-monitoring sites are located along the circle described by a 25-mile radius from the plant.

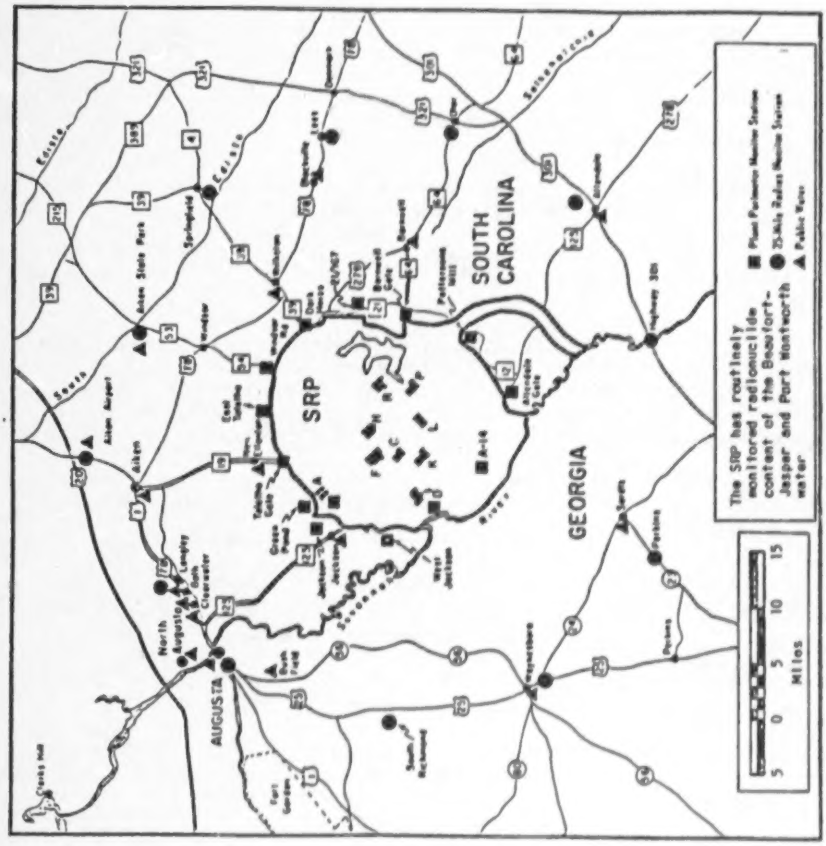

SRP
SOUTH CAROLINA
GEORGIA
AUGUSTA
North Augusta
Aiken
Aiken State Park
Springfield
Windsor
Barnwell
Allendale
Waynesboro
Sardis
Girard
Fort Gordon
Edisto
Savannah
Clarks Hill
Jackson
Langley
A-14
The SRP has routinely monitored radionuclide content of the Beaufort-Jasper and Port Wentworth water
■ Plant Perimeter Monitor Station
● 25-Mile Radius Monitor Station
▲ Public Water
5 0 5 10 15
Miles

FIGURE 2. CONTINUOUS SRP AIR-MONITORING STATIONS AND PUBLIC WATER SAMPLE LOCATIONS

Nonradiological monitoring programs. The water quality and biota of the Savannah River have been monitored continuously since 1951. Water quality analyses of the Savannah River were expanded in 1959 and routine water quality analyses began on SRP streams in 1972.

Since 1959, the U.S. Geological Survey has monitored the temperature and flow of the Savannah River above and below the SRP and at the mouths of Beaver Dam, Four Mile, and Steel Creeks.

Ground water is being monitored in approximately 160 wells at the SRP.

Ambient-air monitoring for hydrogen sulfide and sulfur dioxide began at the SRP in 1977. The air-monitoring program was expanded in 1981 to include total suspended particulates and nitrogen oxides to meet the requirements of a Prevention of Significant Deterioration monitoring program.

Both South Carolina and Georgia have established offsite air quality networks pursuant to their respective state implementation plans under the Clean Air Act. Varied monitoring for suspended particulates, sulfur dioxide, and nitrogen dioxide is continuing at nine South Carolina and Georgia stations.

Radiological impact. Releases of radioactive materials from SRP operations are in compliance with DOE Order 5480.1A, Chapter XI, Requirements for Radiation Protection. Radiological emissions from the plant and estimated effects on the public are published in reports that are publicly distributed.

The 1981 annual dose to an average hypothetical individual at the plant perimeter from SRP atmospheric releases of radioactive materials was approximately 1 percent of natural background radiation and less than 0.2 percent of the DOE limit for offsite exposures. The total radiation exposure at the plant boundary from SRP releases (about 1 mrem/year) and natural background (about 93 mrem/year) radiation, 94 millirems, was substantially less than the dose of natural background radiation received by a person living in Greenville, South Carolina, or Atlanta, Georgia (149 and 124 millirems, respectively). These differences are attributable to variations in naturally occurring radiation. The calculated whole-body population dose to persons living within 50 miles of the center of the SRP (465,000 people) was 118 man-rems from radioactive materials of SRP-origin. During 1981, this same population received an estimated dose of about 54,400 man-rems from natural radiation.

An individual consuming river water from the Beaufort-Jasper or the Port Wentworth Water Treatment Systems in 1981 would have received a calculated dose of 0.28 millirem. The Environmental Protection Agency drinking water standard for man-made radionuclides is 4 mrem/year. The National Council on Radiation Protection and Measurements has reported that the average dose to a person from naturally occurring potassium-40 in food and water is 19 millirems per year, or 68 times higher than the dose resulting from SRP releases to the river.

Even though the SRP contribution to the population dose is very small, the plant has a continuing program to improve operating techniques and to develop new technology directed toward further reducing releases of radioactive materials to the environment.

Operational History

The SRP was the largest construction job undertaken by the AEC. Construction began in February 1951 and it eventually involved over $1 billion in expenditures and a peak construction force of 38,500 workers. SRP was constructed and operated by E. I. du Pont de Nemours & Co. under contract with the U.S. Government.

Uranium fuel fabrication began in M-Area and the extraction of heavy water (D_2O) began in D-Area in 1952.

The first production reactor (R) was started up in December 1953. Other production reactors began operation in February 1954 (P), July 1954 (L), November 1954 (K), and March 1955 (C). The SRP reactors are designed to use heavy water as the moderator and primary reactor coolant in the recirculating system. The heavy water is cooled by water from the Savannah River passing through heat exchangers in a once-through cooling mode. The recirculation of cooling water for R- and P- reactors through Par Pond began in 1958 and 1963, respectively. R-Reactor was placed on standby status in June 1964 and L-Reactor in February 1968.

The chemical separation facilities began processing irradiated fuel and targets from the production reactors in November 1954 (F) and July 1955 (H). Solid radioactive waste was first sent to the burial ground in the first half of 1953 when waste uranium from fuel fabrication in M-Area was disposed of in this facility. The first waste tank was completed in March 1954 and there are 50 currently in use.

SRP reactors have operated for a total of 115 reactor-years without an accidental release of radioactivity or radiation injury to the SRP workforce or the public.

Over 4000 man-years of technical effort have been spent on analyzing the operation of the SRP reactors, the technical limits of operation, and the causes of the postulated accidents. Continual refinement of state-of-the-art technology remains an integral part of all SRP reactor safety analyses activities.

L-REACTOR

Need for Action

The U.S. Department of Energy's (DOE) responsibilities in the defense programs area stem from the Atomic Energy Act of 1954, as amended. Included in the legislation is the Department's responsibility to develop and maintain a capability to produce all nuclear materials required for the U.S. weapons program.

To accomplish this mission, the DOE works closely with the U.S. Department of Defense in planning and implementing the steps necessary to achieve the defense program objectives. Annually, the two Departments jointly propose nuclear materials and weapons production schedules, long-lead procurements, and planning activities. These proposals are forwarded to the President through the National Security Council. In accordance with the Atomic Energy Act, the approval of these proposals by the President and subsequent authorization and appropriation by Congress constitute the legal authority and mandate to the DOE for U.S. nuclear materials and weapons production.

The DOE has reviewed the options available to meet the established need for special nuclear materials, including (1) restarting previously operated reactors at the Savannah River Plant (SRP) and the DOE's Hanford Reservation near Richland, Washington; (2) constructing a new production reactor; and (3) increasing the supply by changing the operating modes and throughput of currently operating reactors.

The previously operated reactors on the Hanford Reservation were shut down and the L- and R-Reactors at the Savannah River Plant were placed in standby status in the 1960s because of a decreasing demand for defense nuclear materials. The reactors at the Hanford Reservation and R-Reactor have not been maintained in the same standby status as L-Reactor, which is expected to be capable of restart by no later than October 1983. For example, over the past 17 years, components from R-Reactor have been removed to be used in the currently operating reactors. The reactors at the Hanford Reservation are older generation reactors and upgrading would be more difficult to accomplish. The time needed to upgrade and prepare either the Hanford reactors or the R-Reactor for operation, estimated to be more than 5 years, exceeds that for L-Reactor. Therefore, these alternatives cannot meet the production needs established by the President. The costs for upgrading the reactors at Hanford and the R-Reactor would far exceed the costs for restarting L-Reactor. In a similar fashion, the construction of a new production reactor would not meet these requirements.

The operation of L-Reactor is required to help attain the levels of nuclear materials established by the President.

History

L-Reactor operated from July 1954 until February 1968, when it was placed on standby status. A decision was made that while on standby, the reactor would not be modified and upgraded, as were the operating reactors at the SRP (C-, K-, and P-Reactors), nor would general maintenance be performed. However, during this period, periodic inspections were conducted to verify that essential services (such as building ventilation) were maintained. Periodically, the status of L-Reactor was reviewed, and costs and time required to restart the reactor were assessed. Detailed inspections of the condition of reactor equipment were performed in 1972, 1977, and 1980.

Funding for the upgrading of L-Reactor was approved in December 1980. Important milestones in the history of L-Reactor are given in Table 2.

Table 2. L-Reactor Chronology

- REACTOR CRITICAL - JULY 1954
- REACTOR PLACED ON STANDBY - FEBRUARY 1968
    - Irradiated components discharged and processed
    - Heavy water drained and stored
    - Essential area services maintained
    - Some equipment removed
    - No maintenance performed
- READY TO OPERATE - OCTOBER 1983

Upgrading Activities

The restoration and upgrading of L-Reactor to match the safety and operational reliability of the operating reactors were begun in December 1980. This work includes the replacement of deteriorated and obsolete equipment and the installation of modern control and monitoring components. Modifications of special significance to improve reliability, safety, and environmental protection include:

1. Computer controls. Four computer systems (two control and two safety) similar to those in P-, K-, and C-Reactors will be installed. The two control computers are used to regulate reactor operation. These computers monitor the output signal of over 3000 instruments and compare these signals to reactor operating limits. The safety computers monitor flows and temperatures for the reactor and shut down the reactor if any limits are exceeded.

2. Disassembly basin improvements. A recirculating-filter system (including deionizer beds and sand filters) is being installed to remove radioactivity from disassembly basin water before the discharge of this water to an onsite seepage basin.

3. Storage tank. A 500,000-gallon tank has been installed in the 50,000,000-gallon emergency basin. In the unlikely event of an accident, this storage tank will contain the initial discharge of contaminated water from the reactor building and thus reduce releases of radioactivity into the environment.

4. Seismic bracing. Additional bracing has been added to the reactor vent stack, actuator tower, and critical process piping to ensure integrity in the event of a design-basis earthquake.

The restoration and upgrading of L-Reactor will cost about $214 million; details of these costs are shown in Table 3 below. Numerous operational readiness checks will be made before L-Reactor is determined to be ready to operate.

Table 3. Funding for Restart of L-Reactor

	$ MILLION
● CAPITAL	
- Add improvements made to operating reactors since 1968	134
● REPAIR/RESTORATION	
- Restore unserviceable equipment	35
● OPERATING	
- Salaries, training, utilities	45
Total	214

THE ENVIRONMENTAL ASSESSMENT

This section summarizes the pertinent information and the expected environmental effects discussed in the "Environmental Assessment L-Reactor Operation, Savannah River Plant" (EA), DOE/EA-0195. Monitoring studies that are or will be conducted as a result of L-Reactor operation are also described, and the objectives and schedules of such studies are indicated. Greater detail on each of these issues is provided in the EA.

Baseline Data

The L-Reactor EA included comprehensive information on environmental issues, drawn from over 100 documents developed over the last 30 years. These documents, which are available to the public, include Federal and state publications, environmental and biological monitoring reports, results of government- and university-sponsored studies, and articles from scientific journals. Topics addressed include biology, ecology, ichthyology, geology, hydrology, meteorology, radiological releases and dose calculations, environmental regulations, socioeconomics, and accident risks. Information on these topics (developed by the Savannah River Ecology Laboratory, Savannah River Laboratory, Academy of Natural Sciences of Philadelphia, and other experts) was used to assess the environmental effects of the restart of L-Reactor. The EA presents analyses and evaluations that are supported by extensive scientific data collected by recognized research organizations.

Key Areas Analyzed

Nonradiological and radiological effects of L-Reactor operation were analyzed in Chapter 4 of the EA. These effects are summarized in Table 4. In addition to the effects of L-Reactor operation, the incremental effects of other Savannah River Plant (SRP) facilities associated with L-Reactor and the cumulative effects of SRP facilities not associated with L-Reactor and nearby facilities near the SRP were studied. The analysis encompassed the following key environmental areas:

- Thermal discharge
  - The Savannah River
  - Wetlands
  - Fisheries
  - Cooling-water alternatives
- Radiation dose commitment
  - Maximum individual dose
  - Regional population dose
  - Cesium-137 in drinking water
- Accident risk
- Endangered species

Chapter 6 of the EA identifies the permits and environmental approvals required before the U.S. Department of Energy (DOE) can operate L-Reactor. The Savannah River Operations Office of the DOE (DOE-SR) will comply fully with the provisions of each permit, and with all DOE regulations on occupational and public safety, and environmental protection.

Thermal Effects

Steel Creek, Savannah River swamp and the Savannah River will again receive thermal effluent from L-Reactor. The expected effects from the L-Reactor cooling water effluent (thermal discharge) are discussed in Section 4.1.1.2 of the EA, and cumulative effects of the thermal discharge on wetlands and the Savannah River in Section 4.4.3. This section summarizes the impacts of the thermal discharge on the Savannah River, wetlands, and fisheries including cooling water alternatives.

The Savannah River. The 7-day, 10-year low-flow rate [the U.S. Environmental Protection Agency (EPA) standard], 5865 cubic feet per second, and the average flow rate, 10,400 cubic feet per second, were both used for thermal analyses presented in the EA. The 1956-1976 minimum daily Savannah River flow measured at Augusta, Georgia, 4495 cubic feet per second, was also used in the analysis of the thermal mixing zone and thermal impacts on the river.

Table 4. Summary of Nonradiological and Radiological L-Reactor Effects (Page 1 of 3)

Issues	Potential Impact
	Nonradiological Effects
Socioeconomics	The SRP work force will increase by a total of 350 (about 4 percent of the total SRP work force) for L-Reactor operations.
Archeological sites	One site eligible for nomination to the National Register of Historic Places. Monitoring and mitigative measures have been proposed to protect this site.
Cooling-water system	
Withdrawal	L-Reactor will withdraw about 388 cubic feet per second, or about 4 percent of the average annual flow rate and 7 percent of the 7-day, 10-year low flow of the Savannah River. Withdrawal will cause the impingement of an additional 5 fish per day, and the entrainment of less than 5 percent of the fish eggs and less than 4 percent of the fish larvae passing the SRP intakes.
Thermal discharge to Steel Creek	L-Reactor will discharge about 388 cubic feet per second of cooling water to Steel Creek at 158-175°F. Approximately 1000 acres of previously impacted wetlands now being revegetated (3 percent of the SRP wetlands habitat) will be affected and an additional 7 to 10 acres per year will be affected as a result of the thermal discharges. Delta growth will resume at a rate of about 3 acres per year. Habitat for the American alligator, waterfowl, fish spawning, and a variety of species similar to those in nonthermal streams at the SRP will be eliminated in Steel Creek and the adjacent delta area.

Table 4. Summary of Nonradiological and Radiological L-Reactor Effects (Page 2 of 3)

Issues	Potential Impact
Nonradiological Effects (Continued)	
Thermal discharge to Savannah River	In the summer, thermal discharges from L-Reactor will increase the overall river temperature by less than 1.4°F after mixing. The thermal plume is expected to allow a sufficient zone of passage for fish. Impacts from the thermal plume are expected to be small.
Water quality	Discharges to the K-Area ash basins will increase approximately 15 percent. Sanitary wastes will be discharged after secondary treatment. Liquid effluents discharged to the Savannah River via Steel Creek will have chemical characteristics similar to those of the river.
Air quality	Operational emissions will consist primarily of nitrogen oxides, sulfur oxides, and particulate matter. The L-Area powerhouse was dismantled during the standby period. Emissions from K-Area will increase by 15 percent in order to supply steam to L-Reactor. No detectable impact on regional air quality is expected.
Endangered species	No critical habitat as designated by the U.S. Fish and Wildlife Service occurs on the SRP. Habitat for about 25 American alligators in the Steel Creek system will be eliminated.
Radiological Impacts	
Radiation dose to work force	Operating personnel will work in controlled-radiation-exposure areas. All high-level radioactivity operations will be remotely controlled. Systems have been upgraded to provide increased control over radioactive releases. Occupational doses are calculated to average about 69 man-rems per reactor-year.

Table 4. Summary of Nonradiological and Radiological L-Reactor Effects (Page 3 of 3)

Issues	Potential Impact
	Radiological Effects (Continued)
Radiation risks to the public	
Routine operations	The maximum individual dose will be about 1.3 millirems in the tenth year of operation. The dose to the population within 50 miles of the SRP will be about 56 man-rems, which represents about 0.1 percent of natural background radiation.
Accidents	Accidents are highly unlikely; safety systems have been improved to further reduce the chance of an accident.
Radiocesium transport	About 9.8 curies of previously deposited radiocesium could be resuspended and transported to the Savannah River during the first year and about 20 to 25 percent less each year thereafter. During the first year, radiocesium concentrations, after complete mixing in the river, will be about 1.0 picocurie per liter, assuming average-flow conditions. The maximum individual dose from this release is calculated to be about 5 millirems for the first year and should decrease to about 0.6 millirem by the tenth year of operation. The average dose to consumers of Port Wentworth and Beaufort-Jasper water will be 0.03 and 0.003 millirem in the first and tenth years, repectively. Of the 9.8 curies of radiocesium remobilized, 2.3 curies could be deposited in a 1235-acre offsite swamp. The deposition rate will decrease to about 0.3 curie by the tenth year.

The thermal plume discharged through the mouth of Steel Creek remains on the South Carolina side of the river and becomes completely mixed about 1.5 miles downstream from the creek mouth. Under average-flow conditions, the increase in river temperature resulting from the plume is calculated to be about 0.7°F. This would increase to about 1.2°F under 7-day, 10-year low flow conditions.

A sufficient zone of passage for aquatic life will exist opposite Steel Creek (between the plume and the Georgia river bank). Thermal modeling shows that during discharge from K- and L-Reactors, with a 7-day, 10-year low river flow, the creek-to-river temperature difference can be as large as 15.5°F and the plume will not exceed one-third of the surface area and one-quarter of the cross-sectional area of the Savannah River. A zone of passage was observed between the plume and the Georgia river bank during monitoring studies of Steel Creek performed by the SRP and the U.S. Geological Survey since 1958 while L-Reactor was operating.

The discussion of cumulative thermal impacts on the Savannah River presented in Section 4.4.3 of the EA addresses this issue.

Wetlands. The SRP contains approximately 39,000 acres of wetlands. Of this area, some 31,400 acres consist of bottomland hardwoods and about 7800 acres consist of swamps adjacent to the Savannah River. The latter wetland area represents a small precentage of the total available wetland habitat in the Savannah River system. Approximately 2800 acres of the 7800-acre Savannah River swamp have not been affected by thermal discharges from operating reactors and will not be affected when L-Reactor resumes operation. The resumption of L-Reactor operation potentially will affect about 1000 acres of wetlands, which represents only 3 percent of the total SRP wetland habitat. This area was affected by L-Reactor operation before 1968 and has since been undergoing successional recovery. This recovery indicates that the reintroduction of heated effluent will not cause an irreversible impact. The 1000 acres include about 580 acres along the Steel Creek floodplain and 420 acres of the Savannah River swamp between the Steel Creek delta and the mouth of Steel Creek. Pursuant to Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands), as well as DOE regulations in 10 CFR 1022, a Floodplain/Wetlands Notice was published in the Federal Register on July 14, 1982 (47 FR 30563) and a Floodplains/Wetlands statement of finding was published in the Federal Register on August 23, 1982 (47 FR 36691). The Floodplains/Wetlands Assessment was included in the EA (Appendix B of the EA).

Fisheries. Extensive entrainment and impingement studies were conducted at the SRP intakes and along the Savannah River in the vicinity of the cooling-water intakes as part of a 1977 Section 316(b) demonstration submitted to the EPA. Less than 7 percent of the 7-day, 10-year low flow (5865 cubic feet per second) will be pumped for L-Reactor. Results from these studies indicate that less than 5 percent of the fish eggs and less than 4 percent of the fish larvae passing the SRP intakes would be lost to entrainment in L-Reactor cooling water. The intake water withdrawal of L-Reactor will cause the impingement of an additional 5 fish per day, or a total of 16 fish per day for all SRP operations.

The EA discusses the impacts of the loss of spawning grounds in Steel Creek and its floodplain on the riverine fish populations; however, there are other similar habitats in the Savannah River system. The temperatures in the lower reaches of Steel Creek may be high enough to exclude the creek and adjacent portions of the swamp as a potential spawning area for riverine and anadromous fish during the spawning season. However, the thermal plume does not extend across the Savannah River and allows a sufficient zone of passage for important migratory fish such as American shad, blueback herring, and striped bass to reach other spawning areas in the Savannah River system.

The EA also addressed cumulative impacts on the Savannah River and its aquatic life of cooling-water withdrawals and thermal discharges in relation to other SRP operations and other facilities located on the Savannah River (pp. 4-46 to 4-48). The EA pointed out that, since none of the thermal effluents interact in the Savannah River, there will be no thermal blockage after L-Reactor operation is resumed.

Cooling-water alternatives. As described in Appendix B of the EA, several recirculating and once-through cooling-water options were assessed. Primarily because of the time required to design, permit, and construct, and also because of substantially higher capital costs, recirculation alternatives were not considered viable alternatives. The environmental impacts of all the once-through systems are not significantly different in terms of impacts on floodplains and wetlands. These alternatives would result in schedule delays and/or high capital costs. DOE determined in the floodplain/wetland statement that there is no practicable alternative to direct discharges of L-Reactor cooling water to Steel Creek (47 FR 36691, August 23, 1982).

Radiological Dose Commitments

There are four principal sources of radiological discharges due to the resumption of L-Reactor operation: (1) atmospheric releases; (2) liquid releases to surface streams and seepage basins; (3) the remobilization of radiocesium previously deposited in Steel Creek sediments; and (4) solid radioactive wastes. The EA characterizes their source terms, methods, and assumptions for dose calculation and presents the expected radiological doses.

Individual dose. The individual who would receive the highest dose from atmospheric releases from L-Reactor was assumed to live continuously on the SRP boundary about 8 miles west of the reactor. The selection of this location was based on consideration of the distance to the SRP boundary and on meteorological dispersion characteristics. Doses were conservatively calculated for the total body and for various organs.

The maximum total-body dose to an individual from atmospheric and liquid releases was calculated to be about 0.25 millirem in the first year of L-Reactor operation, and about 1.3 millirems in the tenth year (Table 5). The individual who would receive the highest dose from liquid effluents from the L-Reactor is assumed to live near the Savannah River downstream from the SRP. This hypothetical individual is assumed to drink river water, after complete mixing at annual average river flow of 10,400 cubic feet per second, to consume fish from the river and shellfish from downstream estuarine areas, and to receive external exposures from shoreline activities, swimming, and boating. About 94 percent of this dose was from drinking water, which had about equal contributions from both ground- and surface-water sources. As shown in Table 5, the average dose from liquid releases to consumers of water from the Port Wentworth and Beaufort-Jasper water treatment plants is about 0.006 and 0.04 millirem in the first and tenth years, respectively.

Table 5. Individual Dose (Millirems per Year) From L-Reactor Operations

	Maximum Dose at SRP Boundary		Average Dose to Port Wentworth and Beaufort-Jasper Water Consumers	
Source of Exposure	First Year	Tenth Year	First Year	Tenth Year
Atmospheric releases	0.22	1.2	--	--
Liquid releases	0.025	0.13	0.006	0.04
Radiocesium transport	4.8	0.6	0.03	0.003
Total	5	1.9	0.04	0.04
DOE standard	500	500	170	170

Natural background radiation is 93 millirems per year.

Dose calculations for the remobilization of radiocesium in Steel Creek sediments assumed that all radiocesium released would reach the Savannah River, and mix completely with the annual average river flow rate of 10,400 cubic feet per second. The dose associated with the first year of L-Reactor operation was analyzed because the releases in subsequent years will decrease continuously from the first-year release of 9.8 curies. The estimated first year concentration of 0.8 picocurie per liter is well below the EPA drinking water standard for Cs-137 of 200 picocurie per liter. (Recent studies since the publication of the EA revised the estimated Cs-137 remobilization rate to 4.4 curie during the first year of L-Reactor operation and reduced the estimated Cs-137 concentration in the drinking water supplied by downstream water treatment plants to be no more than 1/2000 of EPA standard - Table 6.)

As shown in Table 5, the maximum total-body dose from radiocesium to an individual living at the SRP boundary was conservatively calculated to be about 4.8 millirems for the first year of L-Reactor operation and about 0.6 millirem for the tenth year; 98 percent of this dose would be from eating Savannah River fish. The corresponding average dose from radiocesium commitments to consumers of water from Port Wentworth and Beaufort-Jasper water treatment plants are calculated to be 0.03 and 0.003 millirem in the first and tenth years, respectively.

Table 6. Cesium-137 Effects on Beaufort-Jasper and Port Wentworth Drinking Water

Water	First Year Cs-137 Concentrations (pCi/l) Environmental Assessment	First Year Cs-137 Concentrations (pCi/l) Present Estimate	Ratio of Present Estimate to EPA Drinking Water Standard (200 pCi/l)
Beaufort-Jasper	0.8	0.01	1/20,000
Port Wentworth	0.8	0.09	1/2,000

The composite maximum individual dose of 5 millirems occurs in the first year of L-Reactor operation. This is about 20 times less than the average dose (93 millirems) received from natural radiation by an individual living near the SRP site. It is 100 times less than the applicable DOE radiation standard.

Regional population dose. The highest dose to the population of 852,000 that is estimated to live within 50 miles of the SRP in the year 2000 is received from inhalation. The total-body dose is calculated to be about 7.4 man-rems in the first year of L-Reactor operation and about 56 man-rems in the tenth year (Table 7).

Savannah River water is not used for drinking within 50 miles of the SRP; therefore, the dose to the population in this area will come from eating fish and shellfish, from shoreline activities, and from swimming and boating. The dose to a population of 852,000 living within 50 miles of the SRP was calculated to be about 0.04 man-rem in the first year of L-Reactor operation and about 0.05 man-rem in the tenth year. About 98 percent of this dose is from eating fish from the Savannah River (Table 7).

Table 7. Regional Population Dose (Man-Rem per Year)

Source of Exposure	Dose Within 50 Miles of SRP First Year	Dose Within 50 Miles of SRP Tenth Year	Port Wentworth and Beaufort-Jasper Dose First Year	Port Wentworth and Beaufort-Jasper Dose Tenth Year
Atmospheric releases	7.4	56	--	--
Liquid releases	0.04	0.05	0.4	3.0
Radiocesium transport	20	2.5	1.8	0.22
Total	27	59	2.2	3.2

Note:

A dose of 80,000 man-rems is calculated to be received by the population (based on 852,000 people) living within 50 miles of the SRP from natural radiation sources.

The Port Wentworth and Beaufort-Jasper communities use the Savannah River as a source of potable water. The total-body dose delivered to these populations (about 70,000 people) from drinking water was calculated to be about 0.4 man-rem in the first year of L-Reactor operation and about 3 man-rems in the tenth year.

As shown in Table 7, the total-body dose to the population within 50 miles of the SRP attributable to the remobilization of radiocesium was calculated to be about 20 man-rems in the first year of L-Reactor operation--99 percent of the dose would come from eating Savannah River fish--and about 2.5 man-rems in the tenth year. The total-body dose to Savannah River water consumers in the Port Wentworth and Beaufort-Jasper populations was calculated to be about 1.8 man-rems in the first year of L-Reactor operation and about 0.22 man-rem in the tenth year.

The maximum population dose of 59 man-rems in the tenth year of L-Reactor operation is less than 0.1 percent of the dose of about 80,000 man-rems delivered to the population living within 50 miles of the SRP from natural radiation sources. The estimated number of health effects from operation of L-Reactor and associated SRP facilities are less than 0.04 per year (0.012 premature cancer death and 0.026 genetic disorder) which is less than 0.01 percent of those expected from natural background radiation.

Accident Risk

Safe operation. SRP reactors, which are essentially of the same design, have operated for a total of 115 reactor-years without an accidental release of radioactivity or radiation injury to the SRP workforce or the public. The renovation of L-Reactor involves the installation of all of the safety systems currently used in other operating SRP reactors.

SRP reactors use redundant computers and instrumentation systems for process control and safety shut-down systems. Two computers are used for process control and two other independent safety computers are used to monitor operation and to shutdown the reactor if necessary. The process control computers monitor many process variables and operate in a closed-loop system to control reactor operations. The process control computers also serve as a communications aid to operating personnel by providing system monitoring and operator guidance.

The two independent safety computers act as a "watch-dog" over the reactor performance and serve to initiate reactor shutdown if necessary. Reactor shutdown can be accomplished in about one second by the safety rod system. SRP reactors also have an additional shutdown system which injects an extremely effective liquid neutron absorber. These two separate shutdown systems are controlled by either safety computer or by independent operator action.

At the SRP, the reactor-operating staff is supported by the research and development staff of the SRL; over 4000 man-years of technical effort have been spent on reactor safety. Reactor safety has continued to improve by reducing the probability of an accident and by making cost-effective improvements in reactor systems to mitigate the consequences of an accident.

Accident analyses. The EA discusses the probabilities and consequences of a range of hypothetical accidents. The accident scenarios analyzed included moderator spill, melting of a single assembly during a discharge mishap, melting of seven assemblies caused by a misloading, one percent core melting due to a loss-of-coolant accident (design basis accident), and ten percent core melting due to a loss-of-coolant accident (beyond design basis accident).

Table 8 lists the probabilities and risks of the postulated accidents; the risk (product of probability and dose) ranges from about 2.2×10^{-5} to 4×10^{-3} millirem per year. All values are much less than the risk that could be associated with a natural radiation dose of 93 millirem per year.

Table 8. Risk Evaluation of Accidents

Accident	Probability (y^{-1})	Estimated Whole-Body Risk (mrem/year)
Moderator spill	10^{-4}	5×10^{-4}
Discharge mishap	10^{-4}	4×10^{-3}
Misloading criticality	10^{-7}	2.2×10^{-5}
Loss-of-coolant, 1% core melt	10^{-6}	2×10^{-4}
Postulated accident resulting in 10% core melt	$\ll 10^{-6}$	$\ll 1 \times 10^{-3}$

The consequences and risks of the hypothetical postulated accident in an SRP reactor are low because:

- SRP reactors operate at low temperatures and low pressures, thus reducing stress on coolant pipes.
- The large carbon and HEPA filters are always online during operation.
- The SRP reactors have established 115 reactor years of operation without an accidential release of radioactivity.
- The distance to the site boundary is large—greater than 5 miles.

Endangered Species

Detailed discussions of endangered and threatened species are provided in Sections 3.6.6, 4.1.1.3, and 6.3 of the EA and are cited in references. No critical habitat, as designated by the U.S. Fish and Wildlife Service, exists on the SRP site. Two endangered species were identified by the Fish and Wildlife Service as being potentially affected by L-Reactor operation: the red-cockaded woodpecker and the American alligator. Studies of the distribution of both active and inactive colonies indicate that the resumption of L-Reactor operations will not affect the red-cockaded woodpecker. About 25 American alligators inhabit the Steel Creek floodplain and delta areas. The thermal effluent from L-Reactor will make the habitat unsuitable for alligators. The alligators may move to adjacent habitats that are not affected. There are lagoons and backwater pools that will not be affected by L-Reactor operation; these areas can provide suitable habitat for the alligators. Extensive field surveys have been conducted to determine the population status and to develop mitigation plans. (Currently DOE-SR has completed consultation with the U.S. Fish and Wildlife Service in accordance with Section 7 of the Endangered Species Act, and is in the process of implementing mitigation and monitoring plans.)

Monitoring Programs

The following monitoring programs, which are specific to L-Reactor, are designed to verify operational conditions that have been predicted. This will be accomplished by measuring pertinent environmental variables before L-Reactor startup, and continuing the measurement program during reactor operation. The current monitoring programs will be continued.

Effluent Monitoring. Air and water samples from L-Reactor will continue to be monitored routinely to detect normal and abnormal radioactive releases.

Ground Water. Wells will be established to monitor radioactive and nonradioactive materials in the ground water around the L-Area seepage basin.

Radiocesium. Special studies will continue to be conducted to verify EA predictions concerning the movement and redistribution of radiocesium after L-Reactor startup. These studies will aid in assessing the fate of the inventory in the Steel Creek drainage and projected doses to individuals and populations off the SRP site.

Ecology. Preoperational baseline surveys were conducted in Steel Creek in 1981 and 1982. Ecological studies of the Steel Creek ecosystem are continuing and will continue following L-Reactor restart. The DOE is working closely with the U.S. Fish and Wildlife Service with regard to mitigating measures for the American alligator as the result of the restart of L-Reactor.

A comprehensive fisheries study of the Savannah River is presently being conducted by the SRP. These studies will provide data to compare with EA predictions on fish entrainment and impingement, as well as effects of the thermal plume on fish populations in the river and swamp.

Archeology. An archeological and historical survey was conducted during January and February 1981 on the Steel Creek terrace and floodplain system below L-Area. Five sites (one eligible for nomination and four potentially significant) were determined to be of sufficient content, integrity, and scientific value to be covered by a protection plan to ensure their preservation. A monitoring/mitigation plan has been developed to prevent the destruction of these sites by erosion caused by the increased water flow down Steel Creek from L-Reactor.

PUBLIC RESPONSE

Since the issuance of the Finding of No Significant Impact (FONSI) and the "Environmental Assessment-L-Reactor Operation, Savannah River Plant", DOE/EA-0195 (EA), the U.S. Department of Energy (DOE) has distributed about 600 copies of these documents to the public. To date, the DOE has received letters from about 30 sources, including Federal, state, and local agencies; elected officials; environmental groups; and private individuals. Numerous newspaper articles have been published, several television reports have been presented, and the Savannah River Operations Office of the DOE has participated in various public meetings. Additionally, the DOE has met with the EPA Region-IV, staff of the Governors of the States of South Carolina and Georgia, U.S. Senators Thurmond and Hollings, and U.S. Representatives Derrick and Hartnett. No substantive environmental effects or safety issues were raised which were not addressed in the EA.

The Beaufort-Jasper County South Carolina Water Authority (Authority) notified the DOE of its concern over potential cesium-137 concentrations in the Savannah River, which is the source of its drinking water. The Authority hired Patterson Associates, Inc., a Chicago-based consulting firm to review the EA. At the request of the Authority, the DOE made every effort to assist in Dr. Patterson's review by answering any questions he might have or by providing information he might need. The offer of assistance was declined by Dr. Patterson. When the Patterson Report was made available to the DOE on December 8, 1982, DOE personnel carefully reviewed its findings. The DOE also requested an independent review by two contractors. The results of the reviews by the DOE and its contractors indicate serious technical flaws in the report. The DOE informed the Authority of these flaws, which derive from the misunderstanding and misuse of data from the EA. Because of these flaws, the report draws conclusions that are incorrect and thus invalid. In sum, the report has led to unfounded criticism and undue concerns about the planned resumption of L-Reactor operation.

SUMMARY AND CONCLUSIONS

When the L-Reactor was placed on standby in 1968, it was the intention of the DOE that the reactor be maintained in a condition in which it could resume operation with a minimum time period should the need for nuclear materials increase. In 1980, the DOE determined that the L-Reactor was needed to supply needed nuclear materials and restoration and upgrading activities were initiated.

Concurrent with the restoration and upgrading activities, DOE also initiated comprehensive environmental studies to determine the potential environmental effects of L-Reactor operation. In compliance with NEPA, an environmental assessment (EA) was prepared to determine the environmental effects from resumption of L-Reactor operations. On the basis of the analysis in the EA, the

Department issued the EA and a Finding of No Significant Impact (FONSI) on August 23, 1982. The Department has distributed about 600 copies of the EA and FONSI and received about 30 comment letters. There were no substantive environmental effects or safety issues raised that were not addressed in the EA. It is DOE's conclusion that:

- L-Reactor is required to meet the established need to produce nuclear materials for national defense.
- The DOE decisions were based on a comprehensive EA prepared using extensive scientific data collected by recognized research organizations.
- All major items were adequately addressed in the EA.

Therefore, there is every reason to start L-Reactor as planned.

This completes my presentation. I shall be happy to answer questions.

Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29801

February 16, 1983

Honorable Strom Thurmond
United States Senate
Washington, D. C. 20510

Dear Senator Thurmond:

In response to your invitation at your February 9, 1983, Senate Armed Services Committee hearing on the resumption of L Reactor operation at the Savannah River Plant (SRP), we are submitting, for the hearing record, responses to specific matters raised at the hearing (enclosure 1). As evidenced in our responses, these matters were addressed in the "Environmental Assessment - L Reactor Operations, Savannah River Plant," DOE/EA-0195, August 1982.

Regarding Congressman Butler Derrick's suggestion of preparing an expedited Environmental Impact Statement (EIS) for the restart of L Reactor, as we stated at your hearing, we have concluded that an EIS is not required by the National Environmental Policy Act (NEPA) for L Reactor restart. Furthermore, it does not appear to us that an EIS could be prepared by October 1983 that meets the substantive and procedural requirements of NEPA. We will, of course, continue to respond to any issues which the public may raise concerning the resumption of L Reactor operation.

The Department of Energy (DOE) is working with the U.S. Fish and Wildlife Service to address the specific matters which were detailed in a letter from Mr. J. W. Pulliam, Jr., Director for Region IV, to Mr. R. W. Cochran, DOE, dated January 7, 1983. As requested by Senator Hollings, Mr. Pulliam's letter and DOE's response to it are enclosed for inclusion as part of the hearing record (enclosure 2).

In fulfillment of my commitment to Senator Mattingly to provide additional information on an accidental release of tritium at SRP, enclosed is a copy of the report "Environmental Effects of a Tritium Release from the Savannah River Plant on December 31, 1975" (enclosure 3). As you will note, this reported release was not associated with reactor operation. We will continue to be responsive to expressed concerns about the planned restart of L Reactor. We appreciate this opportunity to respond to questions raised during your February 9 hearing and would appreciate an opportunity to review the hearing transcript to reply to any other issues which were raised.

Again, we support your interest and concerns for both the public and plant personnel. Also, we appreciate the time and effort you and your staff have contributed in this end.

If we may be of further assistance, please do not hesitate to call.

Sincerely,

Morgan

R. L. Morgan
Manager

3 Enclosures
(Note: Enclosure 3 retained in the files of the Senate Armed Services Committee.)

ENCLOSURE 1

U.S. DEPARTMENT OF ENERGY'S

RESPONSE TO ISSUES RAISED IN TESTIMONY PRESENTED AT THE FEBRUARY 9, 1983 SENATE ARMED SERVICES COMMITTEE HEARING RESTART OF L-REACTOR AT SAVANNAH RIVER PLANT

FEBRUARY 16, 1983

1. Cooling Water Alternatives

Appendix B of the Environmental Assessment (DOE/EA-0195) described five recirculating and four once-through cooling-water options. Primarily, because of the time required to design, permit, and construct, and also because of substantially higher capital costs, recirculation alternatives were not considered viable alternatives. Cooling towers for L-Reactor, for example, would cost 39 million dollars and require 3-3.5 years to design and construct. Cooling towers would cause fogging and icing, an increase in consumptive water usage, and would impact vegetation through salt deposition. The environmental effects of all the once-through systems are not significantly different in terms of impacts on floodplains and wetlands. These alternatives would result in schedule delays (18-66 months) and/or high capital costs (3-140 million dollars). The Department of Energy determined in the floodplain/wetland statement that there is no practicable alternative to direct discharge of L-Reactor cooling water to Steel Creek (47 FR 36691, August 23, 1982). If L-Reactor is delayed beyond October 1983 in order to implement an alternative cooling-water system, there are no alternative means that can supply the needed nuclear material.

2. Cumulative Effects

The Environmental Assessment (page 4-37) for L-Reactor evaluated the incremental dose commitment increase from radioactive releases (atmospheric and liquid) from the Savannah River Plant support facilities due to L-Reactor operation. The Environmental Assessment (page 4-48) also evaluated the cumulative dose commitment (determined to be less than 10 percent of the dose received from natural background to a maximum hypothetical individual) as a result of L-Reactor, its support facilities, the rest of the Savannah River Plant, the planned Defense Waste Processing Facility, the proposed Fuel Materials Facility, and Georgia Power's Vogtle Nuclear Plant. The Allied General Nuclear Service facility was not included in the evaluation as there are no plans at this time to operate the facility.

The Environmental Assessment evaluated the thermal plumes in the Savannah River from the Savannah River Plant operations and concluded that the plumes will not interact with each other nor with the thermal discharges from Vogtle Nuclear Plant (pages 4-47 and 48). The Environmental Assessment also utilized the result of studies conducted over the past 30 years and modeling to determine that a safe zone of passage for fish exists in the Savannah River even under worst case low flow conditions.

Cumulative effects are considered for each Savannah River Plant proposed action as evidenced in the analysis given in the environmental documentation for the Fuel Material Facility (DOE/EA-0170), the Defense Waste Processing Facility (DOE/EIS-0082), and waste management operations (ERDA-1537).

3. Data Sources

As noted in R.L. Morgan's testimony (page 10), the L-Reactor Environmental Assessment included comprehensive information on environmental issues, drawn from over 100 documents developed over the last 30 years. These documents, which are available to the public, include Federal and state publications, environmental and biological monitoring reports, results of government- and university-sponsored studies, and articles from scientific journals. Topics addressed include biology, ecology, ichthyology, geology, hydrology, meteorology, radiological releases and dose calculations, environmental regulations, socioeconomics, and accident risks. Information on these topics was used to assess the environmental effects of the restart of L-Reactor. The Environmental Assessment presents analyses and evaluations that are supported by extensive scientific data collected by recognized research organizations (Savannah River Ecology Laboratory, Savannah River Laboratory, Academy of Natural Sciences of Philadelphia, U.S. Geological Survey, and the University of South Carolina, among others).

4. Emergency Planning

Coordination procedures in the event of a radiological incident at the Savannah River Plant have been established and are continually reviewed.

As contained in the Environmental Assessment (page 3-6 and 3-7), the Savannah River Plant has memoranda of understanding with the States of South Carolina and Georgia covering notifications and emergency responsibilities in the event of an actual or potential radiological emergency at the Savannah River Plant. Under these memoranda of understanding, the Department of Energy is responsible for all onsite operations relating to an incident at the Savannah River Plant, and the appropriate state agencies are responsible for all off-site operations. The Department of Energy and the appropriate state agencies during an incident or potential incident have agreed to coordinate information and manpower.

Specific assistance agreements for special support also exist between the Savannah River Plant and Fort Gordon; fire-fighting agreements exist with Allied General Nuclear Services (Barnwell), the City of Aiken and the South Carolina Forestry Commission (page 3-6 and 3-7 of the EA).

An extensive review of local civil preparedness agencies near the Savannah River Plant was conducted in 1980 as part of the Defense Waste Processing Facility Environmental Impact Statement (referenced in the Environmental Assessment). This review indicated that with respect to Aiken, Allendale, Bamberg, and Barnwell Counties in South Carolina, and Columbia and Richmond Counties in Georgia, all except Allendale, which was in the process of establishing a local civil defense agency, had state-approved emergency preparedness plans.

5. Endangered Species

As indicated in the Environmental Assessment (page 3-41), the U.S. Fish and Wildlife Service has published a "Notice of Status Review" in order to solicit information on the wood stork for consideration for listing as an endangered species under Federal regulations. Wood storks have been observed in the Steel Creek delta area. These birds do not appear to be residents of, nor breed in the Savannah River swamp on the Savannah River Plant. No critical habitat has yet been established for the wood stork.

There are no critical habitats at Savannah River Plant as designated by the U.S. Fish and Wildlife Service for the American alligator. Consultation under

Section 7 of the Endangered Species Act is underway with the U.S. Fish and Wildlife Service (EA, page 4-51) and plans are proceeding to protect two lagoons near Steel Creek where alligator adults and juveniles have been observed. Although the Department of Energy has not received the biological opinions to complete the consultation process, a recent letter from the Director, U.S. Fish and Wildlife Service, Region IV, indicated that the Department has adequately satisfied the Endangered Species Act requirements.

6. Fisheries

Several preoperational biological baseline surveys were conducted in Steel Creek and the Steel Creek delta area along with the Savannah River in 1981 and 1982 to determine the use of these areas by both resident recreational and anadromous fishes (EA, pages 3-39, 41). Low impacts have been predicted for impingement/entrainment due to cooling water withdrawal, and a zone of passage will remain for riverine fishes in the Savannah River adjacent to Steel Creek (EA, page 4-13). Additional studies are underway both in the Savannah River Plant swamp near Steel Creek and along the Savannah River in order to confirm expected effects to recreational and migratory fish from L-Reactor restart (EA, page 4-51).

Congregation of fish in the thermal plume during the winter and avoidance of this area in the summer is expected with essentially no effect outside the thermal plume area.

7. Ground Water

Testimony provided by C. R. Jeter, Regional Administrator of the Environmental Protection Agency, indicated that the Environmental Assessment provided an accurate assessment of the ground water effects. This testimony further indicated that the Savannah River Plant had an extensive monitoring program and contamination impacts were being carefully evaluated and appropriate mitigative measures were in the planning stages.

Although the names for geologic deposits that serve as aquifers in the southeast cover multistate areas, the water in these aquifers does not move regionally through the same multistate area. Water in the shallow aquifers at Savannah River Plant enters the ground on the Savannah River Plant and discharges to the streams on the Plant. Water in the deeper Tuscaloosa aquifer enters the ground in northeastern Aiken County, passes beneath the Savannah River Plant without appreciable recharge, and discharges into the lower portions of the Savannah River valley.

Some local contamination of shallow ground water in the vicinity of seepage basins has occurred at the Savannah River Plant. Seepage basins are used to prevent the direct discharges of waste effluent to creeks on the Savannah River Plant. The local contamination does not threaten local domestic water supplies because the groundwater discharges to onsite creeks (which meet applicable water quality standards before leaving the Savannah River Plant) rather than migrate offsite. One seepage basin in M-Area is not separated from the plant boundary by a ground water receiving creek and this situation is being intensively studied. An action plan to mitigate the future spread of contamination in this area is being developed. For example, an air stripping pilot plant has been established and is being evaluated as a possible method. As noted on page 4-37 of the Environmental Assessment, systems to pretreat influent streams to F-, H-, and M-Area seepage basins are being developed. No offsite health problems exist due to contamination of the ground water beneath seepage basins, and no contamination has migrated off the Savannah River Plant property.

The geohydrology at the Savannah River Plant is the best known of any similar industrial area of South Carolina. Studies of the ground water began before the plant was constructed and a comprehensive monitoring program has continued to the present time. Figure 3-7 in the Environmental Assessment portrays the geohydrologic situation that occurs in a region of the Savannah River Plant southeast of Upper Three Runs Creek and within 10 miles of the Savannah River, an area that includes L-Reactor. Except for M-Area, the ground water head reversal shown on Figure 3-7 of the Environmental Assessment makes it impossible to contaminate the Ellenton and Tuscaloosa aquifers from the surface. Even if the pumpage in the area increases substantially, the possibility of contaminating the Ellenton and Tuscaloosa is very small due to other conditions such as the 400 feet of interbedded sand and clays through which the contamination must pass before arriving at the aquifers (EA references and Siple, 1967 USGS Water-Supply Paper 1841, discuss the ion exchange capacities of the clay units). Adequate monitoring, as indicated on page 4-51 of the Environmental Assessment, and remedial action if necessary will prevent the contamination of the deeper aquifers at Savannah River Plant.

8. Health Effects

As given on page 4-43 of the Environmental Assessment, the maximum population dose of 70 man-rems in the tenth year of L-Reactor operation and its support facilities is less than 0.1 percent of the dose of about 80,000 man-rems delivered to the population living within 50 miles of the Savannah River Plant from natural radiation sources. The estimated number of health effects from operation of L-Reactor and associated Savannah River Plant facilities are less than 0.04 per year (0.012 premature cancer deaths and 0.026 genetic disorders) which is less than 0.01 percent of those expected from natural background radiation.

More than 99 percent of the radiation doses to the public living within 50 miles of the Savannah River Plant is due to natural background radiation. Assuming there is no threshold for radiation effects, this means, statistically, that less than one out of every 10,000 occurring cancer deaths in this population might be due to the Savannah River Plant. This would not be detectable by any epidimological study techniques.

Even so, Professor Herbert I. Sauer, an environmental epidemiologist with the University of Missouri School of Medicine (now retired) has looked for such effects. In three separate studies, Sauer examined cancer and infant death rates for areas surrounding and downstream from the Savannah River Plant for the period 1949 (before Savannah River Plant startup) through 1976. In each of these studies, Professor Sauer concluded that "No consistent, statistically significant excesses or deficits in deaths have been identified for areas close to the Savannah River Plant, as compared with more distant".

Preliminary data from Georgia and South Carolina vital statistics offices for 1978-1980 have been statistically analyzed by Savannah River Laboratory to determine if extreme high and low county death rates were associated with proximity to the Savannah River Plant. This study revealed that the extremes, both low and high, tend to occur in counties with low populations. This is consistent with the concept that the observed variation comes from sampling variations and not from fundamental differences in death rates. The observed death rates did not show any relation to geographic location; locations of counties with extreme low and high death rates are scattered widely throughout Georgia and South Carolina.

Cancer is the second leading cause of death in the United States, accounting for approximately 21 percent of all deaths. Cancer death rates are second only to heart disease which accounts for about 38 percent of the deaths. Georgia and South Carolina cancer death rates projected for 1983 by the American Cancer Society are somewhat lower than the United States average as shown below:

Area	Cancer Death Rates Per 100,000 Population
Georgia	155
South Carolina	150
United States	187

The reason the American Cancer Society used projected death rates is because the tabulation and publication of the number of cancer deaths in the United States are usually three to five years out of date. The projected rates are based on their extrapolation of the number of deaths for the most recent years reported by the National Center for Health Statistics of the United States Public Health Service. A study of the American Cancer Society's annual projections for 1960 through 1978 show that their projections are within 1 percent of later tabulated counts.

Radiation health effect studies by Mancuso of Hanford radiation workers has been discredited by the 1980 BEIR III Report prepared by the National Academy of Sciences. The Mancuso study has low statistical power and suffers from statistical instability. The study claims to detect an increased incidence of myeloma and cancer of the pancreas in Hanford employees. More convincing evidence is needed to support the Mancuso claims in light of the fact that in other radiation cancer induction studies, where exposure was much higher than to Hanford employees, no unusual occurrence of myeloma or pancreatic cancer was detected.

9. Independent Review

The data base for the Environmental Assessment was collected and analyzed by Du Pont, Savannah River Ecology Laboratory (University of Georgia), the University of South Carolina's Institute of Archeology and Anthropology, and information published in the open literature in books, periodicals, and annual reports. NUS, as a contractor to Department of Energy, performed independent analyses and assisted the Department in the preparation of the Environmental Assessment. As established by DOE Order 5440.1(b), the departmental procedures for compliance with NEPA provide for the review and approval of environmental assessments by the Assistant Secretary for Environmental Protection, Safety, and Emergency Preparedness. Prior to the issuance of the Environmental Assessment, the Environmental Assessment was reviewed by the Department of Energy's technical staff as required by the Council on Environmental Quality's regulations implementing the National Environmental Policy Act (40 CFR 1506.5). The Environmental Protection Agency, in response to Senator Thurmond's request, independently reviewed the Environmental Assessment and determined it to be a technically adequate document.

10. Monitoring

The SRP has a continuous sampling/monitoring program which routinely collects water, air, food, vegetation, and milk samples in a 1200 square mile area in the vicinity of the SRP. River sampling occurs at the Highway 301 Bridge and at the Beaufort-Jasper and Port Wentworth Water Treatment Plant intake structures. This monitoring program has been expanded to include a more intensive monitoring of the Beaufort-Jasper Water Authority System, including fish, sludge, sediments and water. Data from the SRP continuous monitoring program is published annually and distributed to state and federal agencies. The states of South Carolina and Georgia monitor in the vicinity of the SRP and the data from all sources are comparable.

11. Need

As stated in Mr. Wade's testimony, the Department of Energy, through the Atomic Energy Act of 1954, as amended, is charged with the responsibility to produce all nuclear materials required for the United States weapons program. The Department works jointly with the Department of Defense to determine the material requirements to support the nuclear weapons program. These requirements are developed annually and are provided through the National Security Council to the President for approval. In accordance with the Atomic Energy Act, approval of these proposals by the President and subsequent authorization and appropriation by Congress constitutes the legal authority and mandate to the Department of Energy for nuclear materials and weapons production.

The Department of Energy determined that additional production capacity was needed to meet the requirements for nuclear materials approved by the President in October of 1980. These increased production needs stem largely from efforts to modernize the weapons in the stockpile and to meet the continual requirement for tritium which radioactively decays at a rate of about 5 percent per year. Among the options considered for increasing production were reactivation of reactors at the Hanford Reservation in Richland, Washington, and the L- and R-Reactors at the Savannah River Plant. The L-Reactor was placed in standby status in 1968 after fourteen years of operation and the Department of Energy concluded that it was the only reactor which could be reactivated in sufficient time (October, 1983) to meet the production needs established by the President. Accordingly, pursuant to a supplemental appropriation passed by Congress in fiscal year 1981, a project was initiated to restore and upgrade L-Reactor to permit startup as soon as practicable.

12. NEPA Process

Decisions as to whether or not to prepare impact statements under the National Environmental Policy Act are judgmental and involve the application of general principles on a case-by-case basis. In making these decisions, the Department is guided, of course, by the National Environmental Policy Act and the Council on Environmental Quality regulations implementing the National Environmental Policy Act, Department of Energy guidelines, as well as applicable case law. In the case of L-Reactor, this decision was further guided by the 1982 Defense Authorization Act, which required the Department to prepare environmental impact statements only when required by statute for its defense activities.

In this regard, Council on Environmental Quality regulations require an agency to consider not only the actual intensity or extent of an impact but the context in which that impact takes place. Because this proposal involves the resumption of a past activity and takes place in an area, namely the Savannah River Plant, where similar activities have taken place for some time, the aspect of context took on particular importance in reaching this decision.

Because of these circumstances, the Department decided to prepare an environmental assessment to take a hard look at the situation. The results of the assessment confirmed that the impacts of resumed operation were in many respects predicted to be somewhat less than those experienced during the 1954 through 1968 operating period. In other areas, the differences in impact expected to result from resumed operation and the previous operation were shown to be negligible. In no case was there an impact that would substantially exceed that of the prior operation. Therefore, considering the previous impacts in the area due to the operation of L-Reactor from 1954 to 1968, and viewed in the context of the physical setting and current use of the Savannah River Plant site, DOE found that the impacts resulting from the resumption of L-Reactor operations should not be significant. Given this expectation with respect to impacts, and the fact that the Savannah River Plant has been used for some time for similar activities, the Department could not find that the proposed resumption of operation of L-Reactor required an environmental impact statement. Therefore, the Department prepared and issued on August 23, 1982, a Finding of No Significant Impact.

13. Permitting

The Savannah River Plant is responsible for obtaining the necessary air and water quality permits as "if it were a private industry." The Savannah River Plant's current operations are presently in compliance with applicable air quality regulations, and DOE is currently working toward renewal of an NPDES permit.

Regarding the issuance of an NPDES permit renewal, the Department of Energy is currently engaged in negotiations to resolve questions and concerns by the State of South Carolina including applicable standards to the Savannah River Plant's thermal discharges.

14. Public Concern

The Department of Energy is responding to all public concerns identified in the approximate 30 comment letters on the L-Reactor EA. DOE has also met with Environmental Protection Agency Region IV; the Governors of the States of South Carolina and Georgia; U.S. Senators Thurmond, Mattingly, and Hollings; U.S. Representatives Barnard, Thomas, Derrick, and Hartnett; and/or their staff. No substantive environmental effects or safety issues were raised, by these letters in discussion with State and Federal officials, or from this hearing, which were not adequately addressed in the EA.

In addition, elected officials from the cities and counties around the Savannah River Plant expressed confidence about the Savannah River Plant operations at the Senate Armed Service Committee public hearing on L-Reactor. Savannah River Plant has an outstanding operating experience and safety record with no accidental criticality, fatality, or injuries from nuclear operations or radiation exposure.

15. Public Participation

The Department of Energy's decision not to prepare an Environmental Impact Statement is based on the extensive data base and comprehensive analyses in the Environmental Assessment. Council on Environmental Quality National Environmental Policy Act regulations requires issuance of a draft FONSI for public review only under certain limited circumstances. Since the proposed action is to resume operation of a previously operated reactor and is not similar to actions normally requiring an Environmental Impact Statement, the Department of Energy determined that the CEQ regulations did not require the issuance of the Finding of No Significant Impact (FONSI) for public review. The Floodplain/Wetlands Statement of Findings and the FONSI were both published in the Federal Register on 23 August 1982.

16. Radiocesium

The remobilization of previously deposited radiocesium (Cs-137) from Steel Creek that may result from resumed L-Reactor operation is discussed in Chapters 3 and 4 of the Environmental Assessment. The transport of Cs-137 from Steel Creek to the Savannah River was estimated in the Environmental Assessment (p. 4-22) to be about 9.8 curies in the first year (year of maximum transport), and was recently re-estimated on the basis of field testing to be about 4.4 curies (R. L. Morgan Testimony, p. 17). Using the Environmental Assessment values for conservatism, the Cs-137 concentration in the Savannah River at Steel Creek will be 900 times less than permitted by Department of Energy radiation protection standards and 20,000 times less than the standard after complete mixing in the river (DOE standards are numerically equal to NRC radiation protection standards for Cs-137). The drinking water supplied by the Beaufort-Jasper Water Authority, South Carolina, or Cherokee Hill Water Treatment Plant, Georgia will be at least 1/200 times less than the Environmental Protection Agency safe drinking water standard if the Environmental Assessment conservative estimates are used. The expected dose commitment from drinking Beaufort-Jasper or Port Wentworth water would be substantially lower than the Environmental Assessment estimates or Environmental Protection Agency dose standard of 4 mrem/year (EA Table 4-8;

R. L. Morgan Testimony, Table 5; G. L. Sjoblom Testimony, p. 3). Thus, the public consuming water from the Savannah River will not be adversely affected.

As noted in Environmental Assessment Sections 2.2.8 and 3.7.2, the installation of deionizer and sand filters will prevent the release of any additional Cs-137 to Steel Creek. Very small quantities of Cs-137 will be released to the L-Reactor seepage basin.

The NRDC testimony erroneously suggests that exposure rates of 4.6 R/year have been measured outside the Savannah River Plant boundary. Annual Savannah River Plant environmental/monitoring reports show that the maximum exposure rate measured outside Savannah River Plant was 0.68 R/year, or about one-tenth the NRDC value. The maximum exposure rate was measured in 1976 in an uninhabitable portion of Creek Plantation swamp neighboring Steel Creek. Measurements in 1981 show that this value has decreased to 0.41 R/year..

17. Radiological Effects

There was concern expressed in the statements about the releases of radionuclides, pathway analyses, presentation of results, controlling releases and effects on biota other than man. It was also suggested that an Environmental Impact Statement is needed to determine radiological effects.

Section 4.1.2 (pages 4-17 through 4-29 in the Environmental Assessment) discusses the source terms used for atmospheric and liquid releases and for radiocesium remobilization. These source terms are based on previous and existing reactor operations at Savannah River Plant, and comprehensive and thorough studies by Savannah River Laboratory and Savannah River Ecology Laboratory of radiocesium in Steel Creek. This Environmental Assessment section also discusses the results of dose calculations for both a maximum individual exposure and regional population dose. The methodology employed in performing these calculations was discussed in Appendix A and it is a standard model used throughout the nuclear industry. This appendix also demonstrates the comprehensive nature of the dose calculations; dose components are presented by pathway (six pathways for atmospheric releases; six for liquid) for eight various organs for four difference age groups (infant through adult).

The input parameters and models employed for these analyses used conservative assumptions such that the exposure to an individual or population group is a maximum value. Also, values representative of Savannah River Plant conditions were used. For example, a factor of 3000 was used as the bioaccumulation of cesium-137 in fish (discussed on page 3-47) in calculating doses (Table 4-8). The 3000 factor is 1.5 times that recommended by the Nuclear Regulatory Commission and represents factors measured in fish in the Savannah River. The results from the dose calculations using these numbers and models show the expected dose consequences from L-Reactor operation (Table 4-8) to be a small fraction of natural background radiation. Any additional measures employed to reduce the radiation exposures further would not be cost effective.

In summary, standard methodologies that are used by the nuclear industry in performing dose calculations for Environmental Impact Statement's were also used for the analyses in the Environmental Assessment. In addition the Environmental Protection Agency performed independent dose assessments which confirmed the dose commitments presented in the Environmental Assessment (see testimony provided by G. L. Sjoblom).

Regarding effects on biota, the Environmental Assessment assumes that if man is protected from the harmful effects of radiation, other organisms will be protected. This assumption is shared by the International Commission on Radiological Protection (ICRP Publication 26, January 1977).

18. Regional Study

The Environmental Assessment discusses the cumulative effects from facilities in the vicinity of the Savannah River Plant both from radiological and non-radiological impacts. The need for considering an overall watershed or regional study plan for development, utilization of resources and interbasin water transfers is beyond the scope of the Environmental Assessment.

Should the States of South Carolina and Georgia elect to conduct a regional study, DOE would, of course, cooperate in such an effort.

19. Safety

The Environmental Assessment discusses the probabilities and consequences of a range of hypothetical accidents (page 4-26 through 29). The accident scenarios analyzed included moderator spill, melting of a single assembly during a discharge mishap, melting of seven assemblies caused by a misloading, one percent core melting due to a loss-of-coolant accident (design basis accident), and 10 percent core melting due to a loss-of-coolant accident (beyond design basis accident). The consequences and risks of the hypothetical postulated accident in a Savannah River Plant reactor are low because:

- Savannah River Plant reactors operate at low temperatures and low pressures, thus reducing stress on coolant pipes.
- The large carbon and HEPA filters are always online during operation.
- The Savannah River Plant reactors have established 115 reactor years of operation without an accidental release of radioactivity.
- The distance to the site boundary is large -- greater than 5 miles.

For the Savannah River Plant reactors, the release of 100 percent of the reactor core inventory of radionuclides is not considered credible. Expected environmental conditions were used in performing the accident analyses in the Environmental Assessment rather the extreme conditions typically used in safety considerations.

Nuclear Regulatory Commission regulatory licensing criteria such as Regulatory Guides and Title 10 of the Code of Federal Regulations are not directly applicable to the Savannah River Plant reactors. These criteria were developed primarily for high-temperature, high-pressure, light-water-cooled power reactors. This type of reactor is universally equipped with a containment dome.

However, different licensing criteria are applied to different types of reactors, for instance:

- Gas-cooled reactors are entirely different in design and operation from water-cooled reactors. One such reactor is licensed by the Nuclear Regulatory Commission and currently operating in Colorado. This reactor is not provided with a containment dome.

- Liquid-metal-cooled reactors, because of their unique design, are covered by different licensing practices than water-cooled or gas-cooled reactors. The proposed Clinch River Breeder reactor is an example of this type of reactor and a containment dome is incorporated into the design.

- Older reactors are not necessarily required to meet the criteria applied to current construction. Nuclear Regulatory Commission reviews backfitting of existing reactors on an ad hoc basis.

The Department of Energy adopts uniform standards, guides and codes which provide adequate protection for health and safety and are consistent with those applied to comparable licensed reactors. Similar to Nuclear Regulatory Commissions and industry consensus standards, the Department of Energy safety standards have been upgraded over the years based on evolving technology and lessons learned from incidents such as that which occurred at Three Mile Island.

While Nuclear Regulatory Commission standards are not directly applicable in many cases to the Department of Energy reactors, including L-Reactor, the Department of Energy does review and take these rules and standards into account. An example of this is the Department of Energy policy to apply applicable requirements in ANS 3.1 to operator training programs. ANS 3.1 is the reference standard for licensed power reactors.

The Department of Energy's assessment indicates that L-Reactor has been, and will be operated as safely as commercial nuclear power plants. This assessment is composed of past safe experience, analysis of safety achieved in design, accomplished safety improvements, and planned continuing improvements in the future. The Department's assessment and SRPs successful operating experience are direct indicators of the adequacy of the Department's standards in providing comparable safety to licensed reactors.

The existing confinement system assures an acceptable risk for a large spectrum of credible and noncredible accidents assessed in the analyses. If an additional safety feature were considered necessary to reduce consequences of noncredible hypothetical reactor accidents, a design that is complementary to the existing reactors would be selected from several alternatives. It is the Department's judgment that a containment dome would provide a minimal increase in safety and is not considered cost effective.

While the containment feature may offer some slight increase in reactor safety, this is only one aspect of the total safety system. In considering the total reactor system, the Savannah River Plant reactors would be judged to be less susceptible than typical operating power reactors to accidents because of their inherent simplicity, low stored energy, and multiple safety systems. Notwithstanding any such judgement of comparability, continuing safety studies and safety improvements are intended for the L-Reactor as has been done for Savannah River Plant reactors since plant startup over 25 years ago.

The safety systems of the Savannah River Plant reactors have been upgraded on an ongoing basis. Since L-Reactor was shutdown in 1968, more than 20 million dollars have been spent on reactor safety related capital improvements to the other Savannah River Plant reactors. All of these improvements are being incorporated in L-Reactor. About three-quarters of the L-Reactor renovation cost has been to upgrade systems and incorporate safety and operational improvements made to other reactors since the L-Reactor shutdown in 1968.

The L-Reactor has been thoroughly inspected and all components that showed any evidence of deterioration are being replaced or repaired. Upon completion of renovation L-Reactor will have been upgraded to current safety standards for Savannah River Plant reactors. This includes installation of extra seismic bracing. In order to set operating limits, reactivity transients are thoroughly analyzed. The response to reactivity transients is fully automated and the first line of defense, the safety rod system, is backed up by an automatically initiated liquid poison injection system, a feature not found in licensed power reactors.

Safety considerations associated with L-Reactor are the same as those for the operating Savannah River Plant reactors. These safety considerations have been, are, and will continue to be subjected to a strong, on-going safety review system with elements of independence at all levels.

Provisions for independent safety review are required by the Department of Energy policy for each level of the organization, including the contractor, the Department of Energy field office, and the Department of Energy Headquarters. This is supplemented by the use of consultants and advisory committees. The Department of Energy policy contains requirements for strong, independent internal review systems as part of the contractor's organization. Each Department of Energy field office, including Savannah River, has an organizationally independent safety staff, which reviews contractor activities independent of line programmatic responsibilities. Similar independence exists at the Department of Energy Headquarters level. The Department of Energy reactor safety policy is provided by an independent health, safety, and environment organization reporting to the Department of Energy Secretary's office. This organization independently overviews and appraises the Department of Energy field office safety efforts. As mentioned previously, organizational independence is supplemented by consultants and advisory committees in all three organizations - contractor, Department of Energy field office, and Department of Energy Headquarters. A recently established Reactor Safety Advisory Committee of outside experts provides periodic review and advice to contractor management. The Savannah River Field Office and Department of Energy Headquarters utilize outside consultants as necessary in safety reviews. The Department believes the above measures provide an adequate degree of independent review for L-Reactor, as reflected by the outstanding Savannah River Plant reactor safety record.

A design basis earthquake (DBE) with an acceleration of 20 percent of gravity has been used in the design of Savannah River Plant reactors, including L-Reactor. A similar DBE has been used in the design of commercial nuclear facilities in the area. Based on USGS studies and documents submitted to the Nuclear Regulatory Commission, as well as a May 1982 report which re-evaluated the seismic design criteria for the Savannah River Plant, there are no capable faults (as defined by 10 CFR 100, Appendix A) existing at or near the Savannah River Plant. The Nuclear Regulatory Commission regards the Belair Fault located 20 miles from the Savannah River Plant as non-capable. Studies subsequent to the preparation of the Environmental Assessment demonstrate that the postulated Millett Fault does not exist at all. The May 1982 report concluded that the DBE for L-Reactor is appropriate in conservatism for the design and analysis of facilities at the Savannah River Plant.

20. Socioeconomic

The operation of the Savannah River Plant has a significant effect on the economy of the Central Savannah River area. The total work force at the Savannah River Plant in 1980 was about 8,000 persons.

As contained in the Environmental Assessment, the resumption of L-Reactor operations will result in the contribution of about 28 million dollars per year to the local economy. At the same time, resumption of L-Reactor operations will involve a limited work force (350 average) that will not place a burden on local governmental services including existing wastewater treatment plants.

The presence of the Savannah River Plant or the potential for a nuclear incident does not have a demonstrated adverse impact on property values or patterns of investment. In fact, a study conducted by the Commonwealth of Pennsylvania, Governor's Office of Policy and Planning, Socioeconomic Impacts of the Three Mile Island Accident, concluded that in the aftermath of the Three Mile Incident property values and the local economy of the area surrounding Three Mile Island were not significantly affected. Further, no pattern of disinvestment related to the Three Mile Island incident was discovered.

21. Thermal Effects

The Environmental Assessment (Section 4.1.1.3) describes the expected loss of 1000 acres of wetlands in the Steel Creek area including the biota that will be affected. The Steel Creek system will revert to conditions similar to those that existed prior to shut down in 1968 and similar to the other thermal streams of Savannah River Plant. Some backwater areas will remain as refuges for some species (EA, page 4-9). An additional 7 to 10 acres of wetlands per year may be impacted in the edge of the delta area due to thermal discharges (EA, page 4-9). This defoliation could lead to a slight increase in temperature at the Steel Creek mouth, however most of the cooling would occur between the L-Reactor outfall canal and the delta area (EA, pages 4-6 through 4-9).

The expected thermal plume characteristics at the Steel Creek mouth in the Savannah River are described in pages 4-10 through 4-13 of the Environmental Assessment for a variety of flow conditions including 7-day, 10-year low flow. An adequate zone of passage for migratory fish will exist in the Savannah River. The Academy of Natural Sciences of Philadelphia 30 year monitoring program to study the effects of Savannah River Plant operations indicates that no major changes in the presence of species should occur from the addition of cooling water from L-Reactor (EA, page 4-13). A monitoring program for macroinvertebrates and periphyton will be made in transects across the thermal plume below the mouth of Steel Creek (EA, page 4-52).

Department of Energy-Savannah River is currently negotiating the NDPES permit for thermal discharges from L-Reactor and will meet all the State of South Carolina requirements.

22. Waste Management

The Department of Energy has undertaken several studies that have evaluated the permanent disposal of high-level radioactive waste (HLW). These studies indicate that the Savannah River Plant HLW can be safely immobilized and will be removed from the Savannah River Plant to a permanent federal repository. In 1980 the Department of Energy decided not to undertake an R&D program on the direct disposal of HLW in the bedrock beneath the Savannah River Plant (Record of Decision on DOE/EIS-0023, 45 FR 9663). There appears to be no new basis presented in the 1981 National Research Council-National Academy of Sciences review that would support a reversal of that decision.

The Department of Energy has decided to construct and operate a Defense Waste Processing Facility (DWPF) at the Savannah River Plant to immobilize existing and future HLW (including that from L-Reactor operation) generated at the Savannah River Plant. The strategy for permanent disposal of the immobilized HLW is to dispose of it off-site in a Federal repository. Decontaminated salt will be disposed of onsite (Record of Decision on DOE/EIS-0082 47 FR 23801). The selection of borosilicate glass as the waste form to be used in the DWPF to immobilize the HLW has been made (Finding of No Significant Impact based on DOE/EA-0179, 47 FR 57570). Siting and design of the repository for DWPF immobilized waste will be addressed in subsequent environmental analyses.

23. Water Quality

As discussed on page 3-9 of the Environmental Assessment, two large reservoirs, Clarks Hill and Hartwell which are upstream from the Savannah River Plant, and the Savannah Bluff Lock and Dam at Augusta have stabilized the river flow near the Savannah River Plant to a yearly average of about 295 cubic meters per second (Russell Reservoir, which will begin filling in June 1983, will further stabilize Savannah River flows). Since 1963, it has been the operating practice of the U.S. Army Corps of Engineers to attempt to maintain a minimum flow of about 173 cubic meters per second below the Savannah Bluff Lock and Dam at Butler Creek to accomodate commercial river traffic.

The Environmental Assessment (page 3-15) states that the maximum Savannah River Plant water withdrawal rate of 41.6 cubic meters per second would be 25 percent of the Savannah River flow under the 7 day, 10 year flow (166 cubic meters per second) conditions, or 14 percent of the flow under average conditions. Most of the water returns to the river via the Savannah River Plant streams.

The Environmental Assessment (page 4-10) evaluated the effects of the thermal plume in the Savannah River due to L-Reactor operation and concluded that, even during the summer, the plume is expected to comply with NPDES thermal effluent criteria. Historic data indicate that the thermal plume from Steel Creek remains essentially in the South Carolina side of the Savannah River until it becomes completely mixed with the river about 2.4 kilometers downstream from the mouth of the creek.

The reactor secondary cooling water effluent stream of L-Reactor is comprised of untreated water from the Savannah River. The Environmental Assessment (page 4-13) states that liquid effluents from the L-Reactor area will have a chemical composition similar to that found in the river.

24. Wetlands

The expected wetlands impacts from L-Reactor restart are detailed in pages 4-7 through 4-10 of the Environmental Assessment. Detailed descriptions of this previously thermally impacted area are described in Sections 3.6.1.1 and 3.6.1.2 and in supporting documents by the Savannah River Ecology Laboratory (Smith, et al., EA, page 3-52). The resident biota of these wetlands is also discussed in pages 3-35 and 3-38 of the Environmental Assessment. The 1000 acres given in the Environmental Assessment is a realistic estimate of those areas expected to be impacted by L-Reactor restart. The 28,000 acres given in the Patterson report for example includes the entire drainage area of Steel Creek much of which is upland managed pine forest which will not be impacted by L-Reactor operations.

As indicated in the Environmental Assessment (pages 4-7 and 13-19), the L-Reactor startup will affect only the area impacted during previous reactor operations; no new wetland areas will be impacted. The affected area is less than 3 percent of the total Savannah River Plant wetland area. The Steel Creek delta area is only about 0.3 percent of similar wetlands in the bottomland swamp forest of the Savannah River floodplain between Augusta, Georgia (River Mile 195) and Ebenezer Landing, Georgia (River Mile 45).

The Department of Energy conducted a Wetlands Assessment for the restart of L-Reactor (Appendix B, Floodplain/Wetlands Assessment, of the Environmental Assessment), and published a statement of finding in the Federal Register (47 FR 36691) on August 23, 1982. The Department of Energy determined that no practicable alternative exists to the direct discharge of reactor cooling water to Steel Creek. This system would be expected to recover once L-Reactor cooling water effluents are discontinued as demonstrated by the current Steel Creek conditions.

ENCLOSURE 2

Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29801

February 16, 1983

Mr. James W. Pulliam, Jr., Regional Director
U.S. Department of the Interior
U.S. Fish and Wildlife Service
75 Spring Street, Southwest
Atlanta, Georgia 30303-3376

Dear Mr. Pulliam:

Thank you for your letter of January 7, 1983, to Ronald W. Cochran, Director, Office of Nuclear Materials Production, regarding your review and comments on the "Environmental Assessment - L Reactor Operation, Savannah River Plant," DOE/EA-0195 (L Reactor Environmental Assessment). He has referred your letter to me for response. We appreciate your endorsement of our actions to meet the requirements of Section 7 of the Endangered Species Act. We have considered each of the matters raised in your letter on the impact of the restart of L Reactor on the fish and wildlife resources, and our response to each of these matters is set forth below.

Also, we appreciate your general endorsement of the Environmental Assessment (EA) as adequately covering the impacts on fish and wildlife resources. We note that you question the Finding of No Significant Impact (FONSI). The Department of Energy (DOE) followed the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations, and DOE's guidelines and procedures to implement the requirements of NEPA. The comprehensive nature of the L Reactor EA and the appropriateness of the NEPA procedural process followed by DOE have been endorsed by the U.S. Environmental Protection Agency Administrator, Anne Gorsuch, in a letter to Senator Strom Thurmond of South Carolina dated January 28, 1983. In summary, we feel that the impacts on fish and wildlife resources resulting from the resumption of L Reactor operation are not significant considering the previous impacts in the area due to the operation of L Reactor from 1954 to 1968 and viewed in the context of the physical setting and current use of the Savannah River Plant (SRP) site.

Your letter indicates that additional impact analysis is needed concerning the chronic incorporation and bioaccumulation of radioactive cesium into the higher tropic level fish populations. The bioaccumulation factor used in the EA analysis is 3,000, which is one and one-half times the Nuclear Regulatory Commission (NRC) recommended expected value of 2,000, and it is based on extensive SRP environmental monitoring data.

You requested that impacts on recreational fishing in the vicinity of the Steel Creek/Savannah River confluence be addressed. You indicated that this area was one of the most popular fishing areas for shad, largemouth bass, and redbreast sunfish in the river. State of Georgia creel information indicates this to be the case some 20 miles upstream of SRP at the Savannah River Bluff Lock and Dam but not at the confluence of Steel Creek and the Savannah River.

NEPA requires agencies to consider environmental factors in their decision-making process and to recognize the importance of maintaining and enhancing natural resources to the degree practicable. While the direct discharge of thermal effluent will affect 1,000 acres of previously impacted wetlands currently undergoing successional recovery, the DOE, in accordance with the procedures in Executive Orders 11988 and 11990 and DOE Implementing Regulations (10 CFR 1022), determined that there was no practicable alternative to direct discharge based on schedule and costs. The 1,000 acres of wetlands habitat that will be reimpacted represent only 3 percent of the wetlands habitat on the SRP and less than 1 percent of the wetlands available in the Savannah River system from Clarks Hill Reservoir to the tidal interface area.

Another suggestion was that there should have been consideration of the future of the wetlands in the Steel Creek system without the project. Without addition of thermal discharge to Steel Creek (or after its future cessation), the wetlands of Steel Creek would continue to undergo secondary successional recovery eventually becoming similar to other bottom land and swamp habitat of SRP. The return to the previous operational condition represents a reversal of only 15 years of this recovery. It is estimated that more than 100 years would be required to attain the full recovery to a bottom land/swamp habitat.

In regard to your suggestion that cooling tower alternatives merit further consideration, the EA provides an analysis of cooling water alternatives in Appendix B and determined that cooling tower alternatives were not considered viable due to schedule and cost factors. Other once-through alternatives were analyzed and determined to offer little environmental gain while delaying restart and costing additional dollars. This wetlands practicability finding was published on August 23, 1982, in the Federal Register in compliance with DOE regulations.

I trust that this response addresses all the matters raised in your letter. If you would like additional information, we would be happy to meet with you. Please contact me if a meeting is desired.

Sincerely,

R. L. Morgan
Manager

United States Department of the Interior
FISH AND WILDLIFE SERVICE
75 SPRING STREET, S.W.
ATLANTA, GEORGIA 30303-3376

January 7, 1983

Mr. Ronald W. Cochran
Director, Office of Nuclear
Materials Production
Department of Energy
Washington, D.C. 20545

Dear Mr. Cochran:

The U.S. Fish and Wildlife Service has reviewed the Environmental Assessment dated August, 1982 for the Department of Energy's proposed operation of L Reactor at the Savannah River Plant in Aiken, South Carolina. The following comments are submitted in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and do not necessarily represent the official position of the U.S. Department of the Interior. Contact with our Asheville, North Carolina, Field Office confirms that requirements under Section 7 of the Endangered Species Act have been adequately met.

Although we find that for the most part the document adequately details the majority of impacts to fish and wildlife resources that would result from re-start of L Reactor, we cannot agree with a finding of no significant impact, and have major problems with several basic tenets of the document.

Of primary concern is the use of pre-1968 conditions as a baseline with which to make comparisons of post-startup impacts. Since, as clearly indicated in the document, the Steel Creek system and associated wetlands have recovered greatly from the effects of pre-1968 operational discharges, it would seem appropriate to use existing conditions as a baseline from which to determine findings of impact. This latter comparison most closely follows the intent of NEPA as stated in 43FR230 Section 1508.8 under the definition of effects: "Effects include: (a) Direct effects which are caused by the action and occur at the same time and place" (emphasis added). Within the Act itself, Section 433.1 dealing with Congressional Declaration of national environmental policy highlights the importance of restoring and maintaining environmental quality. Among other responsibilities, NEPA directs the Federal Government to "enhance the quality of renewable resources." The attempt to use a pre-1968 baseline, ignoring the natural ecological recovery the area has experienced since cessation of pre-1968 perturbations, is directly counter to these NEPA principles.

Indeed, use of the current Steel Creek system and its associated fish and wildlife values, as commendably documented within the EA, as a baseline would make a finding of no significant impact almost impossible. Likewise, determinations of compliance with Executive Order 11990, Protection of Wetlands, would require serious reevaluation.

We are also concerned with the recurrent theme throughout the document that the effects of categorical habitat losses are rendered innocuous by the fact that a large amount of similar habitat occurs at the Savannah River Plant. For example: "Most, if not all, [fish] spawning activity could be eliminated; however, other similar spawning habitat is available in nonthermally affected areas on the Savannah River Plant. . . ."; "The resumption of L Reactor operations potentially will affect about 1,000 acres of wetlands, or about 3 percent of the SRP wetlands habitat. . . ." It should be emphasized that these habitats represent a resource of finite nature. Each unit of loss represents a finite reduction in available habitat. Relating these losses to percentages of remaining unaltered habitat do not lessen their impact.

Areas needing additional impact analysis include the longterm effects of chronic incorporation and bioaccumulation of radioactive cesium into the higher trophic level fish populations, particularly as it relates to potential human consumption health problems, and reproductive success of the fishery. Resident Savannah River species such as sunfishes and largemouth bass are of particular concern.

Also, adverse impacts on recreational fishing in the vicinity of the Steel Creek/Savannah River confluence should be addressed. This particular site has been reported as the most popular shad fishing spot in the State of South Carolina (Glenn Ulrich, South Carolina Wildlife and Marine Resources Department, personal communication). It also represents the most popular spot for largemouth bass and redbreast fishing in the Savannah River. It is anticipated that increases in water temperature and turbidity at this site following L Reactor startup would eliminate its viability, and hence utilization, for recreational fishing.

Several sections of the document refer to the Steel Creek system as being in a successional state of recovery from pre-1968 operational impacts. In the absence of additional perturbations, the system would continue this successional process. Since the fish and wildlife resource values of a system may vary with its successional state, i.e., different organisms may benefit as the system matures from early pioneer stages and approaches a climax, consideration of a future without the project should be discussed within the scope of a thorough impact analysis.

Of the alternatives explored in the document, only the recirculation systems, particularly use of mechanical draft cooling towers, appear to offer a substantial reduction of the predicted wetland and fish and wildlife resource impacts. As the cooling tower system would return water to Steel Creek at only a few degrees Centigrade over ambient, the majority of thermally induced habitat destruction would be eliminated. Also, since this alternative requires less pumping from the Savannah River, entrainment and entrapment of fishes, eggs and larvae would be substantially reduced. Potential impacts resulting from resuspension of sediments containing radioactive cesium would likewise be substantially reduced or eliminated. However, recirculation alternatives were dismissed as nonviable due to capital cost excesses and scheduling delays associated with their implementation. As a result, these alternatives were not assessed to the same degree as various once-through system alternatives. In view of the substantial differences in wetland and creek habitat destruction between the cooling tower and the document's favored "base" alternative, we believe that a cooling tower alternative merits further consideration.

In conclusion, we cannot accept the thesis of using pre-1968 conditions as a baseline in order to demonstrate no significant impacts from L Reactor startup. The project and associated impacts as delineated in the document would certainly constitute a finding of significant impact if either current or future without the project conditions are utilized as a comparative baseline. Areas needing further documentation include the bio-accumulation of released radioactive cesium into higher trophic level sportfish, project effects on recreational fishing, future successional changes in the Steel Creek system without thermal perturbation, and expanded evaluation of a cooling tower alternative. We submit that the most appropriate vehicle for this documentation would be a full Environmental Impact Statement.

Sincerely yours,

James W. Pulliam, Jr.

James W. Pulliam, Jr.
Regional Director

Enclosure No. 5

SAVANNAH RIVER PLANT L-REACTOR

Statement of Charles R. Jeter
Regional Administrator, Region IV
Environmental Protection Agency
. Atlanta, Georgia

before the

Senate Armed Services Committee
at North Augusta, South Carolina

February 9, 1983

INTRODUCTION

I am Charles R. Jeter, Regional Administrator of the Environmental Protection Agency, Region IV, located in Atlanta, Georgia. At the request of the Committee, I come to North Augusta today to present EPA's position on the restarting and operation of the L-Reactor. Mr. Glen L. Sjoblom, Director of EPA's Office of Radiation Programs is accompanying me and will address EPA's views on the radiological aspects of the L-Reactor restart.

EPA's role in this project rests with its regulatory authority under the Clean Water Act, Clean Air Act, Safe Drinking Water Act and other applicable Acts including Executive Order 12088, Federal Compliance with Pollution Control Standards. As envisioned by Congress in these respective Acts, most of the environmental permitting authorities have been delegated to the State of South Carolina. These are the authority to issue permits under the Clean Water Act for the discharge of cooling and process water to surface waters, and the authority for issuing permits for prevention of significant deterioration of air quality under the Clean Air Act. Both of these programs are administered by the South Carolina Department of Health & Environmental Control (SCDHEC).

Each of these delegated programs is subject to overview by EPA, and on significant projects such as the L-Reactor restart, EPA works very closely with the State in the permitting process.

EPA's objective in overviewing state programs is to assure consistency among states and proper application of Federal law. To implement this responsibility, EPA audits state program performance and reviews some individual permits. EPA will review the NPDES permit and all other permits relative to the L-Reactor.

The second EPA role in this project is to review and comment on the Environmental Assessment prepared by the Department of Energy. Authority for this activity derives from Section 309 of the Clean Air Act, and the November 1978 Council on Environmental Quality Implementing Regulations. This responsibility covers the evaluation of the full range of environmental impacts associated with the L-Reactor. The testimony presented today will serve as the basis for these comments.

Finally, EPA is charged by Executive Order 12088 to provide consultation to Federal agencies, such as the Department of Energy, and the Office of Management and Budget to ensure that Federal facilities comply with pollution control requirements.

With these responsibilities in mind, I will highlight some of the environmental impacts of this project and conclude by briefly summarizing the existing permitting processes and/or environmental control programs established to resolve or mitigate these impacts.

ADVERSE ENVIRONMENTAL IMPACTS

In our review of the Environmental Assessment for L-Reactor Operation Savannah River Plant, Aiken, South Carolina, published August 1982 by the U.S. Department of Energy, the following areas of environmental impacts were evident:

1. Cooling Water Intake from the Savannah River
2. Discharge of Thermal Effluents into Steel Creek and the Savannah River
3. Groundwater Impacts from Seepage Basins
4. Effect on Wetland Habitat due to Thermal Discharge
5. Effects of the Action on Endangered Species
6. Radiation Issues

EPA's ANALYSIS OF IMPACTS

EPA has evaluated the major impacts of the L-Reactor, and the regulatory programs that control these impacts. Our analysis of each of these issues follows:

1. Cooling Water Intake from the Savannah River

   Currently, the Savannah River Plant uses about 593 million gallons of water per day. This withdrawal represents about 8.8% of the average Savannah River flow. With the restarting of the L-Reactor, an additional 251 million gallons per day of cooling water will be needed. This will result in a total withdrawal of approximately 12.5% of the river's average flow. Using these withdrawal rates, the Environmental Assessment estimates a loss of about 5% of the fish eggs and 4% of the fish larvae passing the SRP due to entrainment in the water intake structure. This is not considered to be a significant impact.

2. Thermal Discharge into Steel Creek and the Savannah River

   As outlined in the Environmental Assessment, the proposed operation of the L-Reactor will result in the discharge of 251 million gallons per day of cooling water at approximately 176°F (summer). The proposal in the Environmental Assessment is to discharge without any controls, such as cooling towers or cooling ponds, to reduce the temperature. Through natural cooling in Steel Creek, the effluent's temperature will be reduced to approximately 90°F (summer) at the point the creek enters the Savannah River. Water quality standards will be attained in the Savannah River.

Ecologically, there will be no significant thermal impact in the Savannah River. This conclusion is substantiated by past studies by the Academy of Natural Sciences of Philadelphia which showed no decrease in fish species or benthic organisms diversity below the mixing zone of the SRP, as compared to stations above the plant during periods when the L-Reactor was operating.

3. Groundwater Impacts from Seepage Basins

The Environmental Assessment addresses groundwater impacts in Section IV under the general categories of radiological liquid releases and incremental liquid releases. As mentioned, Mr. Sjoblom will discuss radiological impacts of the L-Reactor startup.

Concerning non-radiological liquid releases, the L-Reactor will require support from the F-, H-, and M- area process facilities, which currently serve three reactors operating at the present time. Additional wastewater will be discharged into existing seepage basins serving these areas.

The Enviromental Assessment estimates an approximately 33% increase over existing releases. These releases contain trace metals and chlorinated solvents. The Environmental Assessment indicates that control methods are planned to ensure that liquid-effluents released to seepage basins are within discharge limits. The incremental discharges of chemicals to the seepage basins in the chemical separation and fuel fabrication areas are expected to result in only minor impacts to surface streams. There has been significant activity by SRP in determining and developing control measures to address the impacts on groundwater from these seepage basins. The SCDHEC has been the regulatory agency primarily involved with this effort.

SRP plant officials agreed to conduct a comprehensive hydrogeological investigation of the site. The report on the investigation will include information on site specific hydrogeology, description of groundwater movement across the site, identification of groundwater contamination sites and pathways for contaminant migrations, a discussion of groundwater protection practices in effect at SRP, and it will identify measures which are currently under consideration or underway to mitigate groundwater contamination. Based on the information contained in this report, SCDHEC will make decisions concerning groundwater management at the site and will work with SRP officials in obtaining the type of controls necessary to protect drinking water aquifers in the area. The hydrogeologic report will be a comprehensive analysis of the groundwater impacts at SRP.

There is an extensive groundwater monitoring system at SRP. All existing seepage basins are closely monitored and DOE has agreed in the Environmental Assessment to establish permanent monitoring wells around the L-Reactor seepage basin to monitor pollutant loads and transport in the groundwater system. The amount of chlorinated solvents presently disposed of in the M- Area seepage basin will be increased as a result of the startup of the L-Reactor. SRP is in the process of conducting an extensive evaluation of the M- Area to determine if remedial measures are necessary. If the evaluation indicates the need, SRP is prepared to remove and treat the contaminated groundwater.

In the final analysis, groundwater contamination impacts are being carefully evaluated and appropriate mitigative measures are in the planning stages.

4. Effect on Wetlands Habitat Due to Thermal Discharge

There are approximately 39,200 acres of wetlands of various environmental values within the boundaries of the Savannah River Plant. These wetlands consist of 31,400 acres of bottomland hardwoods and about 7,800 acres of emergent wetlands adjacent to the Savannah River. Wetlands such as these can provide overbank storage for flood waters, capture and hold sediments and their associated pollutants, contribute to groundwater supplies as aquifers are recharged, and function as habitat for both terrestrial and aquatic organisms. Past operations at the Savannah River Plant have eliminated or severely altered approximately 2,000 acres of bottomland hardwoods along Beaver Dam Creek, Four Mile Creek, and Pen Branch, and 5,000 acres of emergent wetlands adjacent to the Savannah River.

The Department of Energy's Environmental Assessment estimates that re-starting the L-Reactor will initially adversely impact 1,000 acres of wetlands previously altered by operations and continue to eliminate or modify ten to thirteen acres of wetlands per year from thermal discharges.

5. Effects of the Action on Endangered Species

According to the Department of Energy's Environmental Assessment, significant portions of the area to be impacted by thermal discharges serve as year-round habitat for the American alligator, a Federally listed endangered species. The woodstork, proposed for inclusion on the Federal list of endangered species, also uses the Savannah River swamp bottomland during its summer migration. Without mitigation measures, thermal effluents will eliminate portions of the animal habitat.

EXISTING MECHANISMS TO CONTROL ENVIRONMENTAL IMPACTS

Various State and Federal mechanisms exist presently to provide reasonable assurance that the environmental impacts associated with the re-start of the L-Reactor are minimized or otherwise subject to specific regulations and/or conditions. Chief among these are the mechanisms to control the discharge of any pollutant into waters of the United States. The State of South Carolina has a wastewater discharge permit program approved by EPA under the Clean Water Act. These permits are known as National Pollutant Discharge Elimination System (NPDES) permits. This South Carolina program includes authority to issue wastewater discharge permits to Federal facilities within the State. Those Federal facilities in South Carolina, including the Savannah River Plant, are subject to the provisions of the Clean Water Act. EPA, as mentioned earlier, retains an overview responsibility with respect to permits issued by the South Carolina program. Therefore, it will be the State's obligation in the first instance to determine to what point waters of the State subject to regulation extend, and what limitations to place on the effluent which may be discharged from the L-Reactor. This would be to satisfy both the technology-based requirements imposed by Federal law and the stream classification imposed by the State. With respect to the heat discharged by the L-Reactor, it is the obligation of the State to determine whether Section 316 of the Clean Water Act applies. That is, if the Savannah River Plant seeks relief from the South Carolina thermal stream standard applicable to their receiving stream by demonstrating that, notwithstanding the heated discharge from the L-Reactor, the protection and propagation of a balanced, indigenous population of fish, shellfish and wildlife can be assured, the State has the obligation to assess that demonstration and grant or deny the relief. Additionally, the State must determine if requested by SRP - if the variance provisions of the South Carolina Water Quality Standard System are applicable. The State standard system has been approved by EPA.

On the heated discharge question, if South Carolina denies DOE's request for relief, EPA cannot overrule that action. If it grants the relief, EPA must review and approve the determination.

The NPDES permit issuance, which is administered by SCDHEC with EPA overview, is an extremely important aspect of this project. The decisions made in this permit will determine the allowable temperature of the discharge which will dictate the level of temperature control. The level of temperature control will dictate the amount of wetland impact.

Other existing mechanisms relating to the environmental impacts of re-starting the L-Reactor and EPA's responsibilities are:

1. Cooling Water Withdrawal

   Section 316(b) of the Clean Water Act requires that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing impacts to the aquatic system. This is accomplished through provision in the NPDES permit.

2. Potential Groundwater Impacts

   The Safe Drinking Water Act (SDWA) protects public drinking water supplies by requiring testing for constituents with maximum contaminant levels (MCL). If at any time one of these constituents exceeds a MCL, corrective action must be taken. The Act also provides for injunctive relief if a public water supply is threatened by a contaminant which may present an imminent and substantial endangerment to health. These mechanisms serve to protect public drinking water supplies both on and off the SRP.

The public water supply program of the SDWA has been delegated to the SCDHEC. While the state maintains primacy enforcement responsibility, EPA does maintain active oversight and stands ready to take independent action if necessary to protect the public health.

The Agency maintains close contact with the state's groundwater program to provide assistance where requested and staff training. In particular, we can provide expert investigative assistance and recommendations for corrective measures, if necessary.

3. Wetland Impacts

Acting under Executive Order 11990, Protection of Wetlands, measures could be implemented by DOE to minimize or compensate for adverse impacts upon wetlands.

4. Radiation Issues

Again, radiation issues will be discussed by the Director of EPA's Office of Radiation Programs, Mr. Glen L. Sjoblom.

5. Endangered Species

Under Section 7 of the Endangered Species Act of 1973, Federal agencies are required to consult with the U.S. Fish and Wildlife Service to ensure that these actions do not jeopardize the continued existence of an endangered species or result in adverse modification or destruction of an endangered species' critical habitat. In this regard DOE is presently conducting studies on effects of restarting the L-Reactor on the woodstork, pending resolution of its listing status as an endangered species.

6. Air Emissions

EPA has listed radionuclides as a hazardous pollutant under Sections 112 and 122 of the Clean Air Act. We are presently operating under a schedule to propose standards for radionuclides by March 29, 1983. Since a number of source categories are being studied for regulation, it is possible this facility could be affected by future regulations.

We expect traditional (non-radioactive) air emissions associated with this activity to be minor. The SCDHEC is aware of the emission points and is actively handling this area.

SUMMARY/EPA POSITION

1. The Environmental Assessment developed by DOE is basically a valid analysis of environmental impacts.

2. There are permitting and other procedures in place and operational to analyze and mitigate the various impacts. In most cases, the SCDHEC is the lead regulatory agency charged with permit determinations. EPA basically has an overview responsibility to ensure proper application of Federal law.

3. Procedures are in place to evaluate the groundwater impacts and develop appropriate remedial actions.

4. Programs are in place to monitor the actual discharges from the various sources and to monitor the air, water and groundwater at the plant and in surrounding areas. For example, the NPDES permit requires frequent monitoring of thermal and other wastewater discharges. Also, there is an extensive groundwater monitoring system in place which is being expanded. SCDHEC and the Georgia Department of Natural Resources continue to monitor the air and water in the surrounding areas as well as downstream of the facility. The Savannah River is monitored at many locations once a month as part of state-wide surveillance programs. These monitoring programs ensure compliance with permit conditions and give a continual analysis of the quality of the air and water.

Enclosure No. 6

SAVANNAH RIVER PLANT L-REACTOR

STATEMENT OF
GLEN L. SJOBLOM, DIRECTOR
OFFICE OF RADIATION PROGRAMS
U.S. ENVIRONMENTAL PROTECTION AGENCY

BEFORE THE
SENATE ARMED SERVICES COMMITTEE
AT NORTH AUGUSTA, SOUTH CAROLINA

February 9, 1983

Mr. Chairman and Members of the Committee

I am Glen L. Sjoblom, Director of the Office of Radiation Programs of the U.S. Environmental Protection Agency (EPA).

The Environmental Protection Agency develops radiation protection criteria, standards, guidance, and policies; conducts a national environmental radiation surveillance program, participates in Federal emergency response planning, and evaluates and assesses the impact of new radiation technology. Liaison with the States is maintained through the EPA Regional Offices and through direct participation in the activities of the Conference of State Radiation Control Program Directors.

I am pleased to have this opportunity to describe EPA's evaluation of radiological aspects of the renewed operation of the L-Reactor. EPA's evaluation is based on our review of the Environmental Assessment Report prepared by the Department of Energy (DOE), and our examination of relevant monitoring data collected by the States of South Carolina and Georgia. In addition, we recently conducted a field survey of radioactivity in air emissions from operations at the Savannah River Plant (SRP). Lastly, we performed various modeling analyses to estimate the radiological impact of current and future releases at the Plant. EPA's review has involved personnel with radiation expertise from the Office of Radiation Programs in Washington, the Regional Office in Atlanta, and ORP's Eastern Environmental Radiation Facility in Montgomery, Alabama.

The Agency has concluded that renewing the operation of the L-Reactor should not create any significant radiological impacts on the public. The remainder of my testimony will describe the impacts we believe are likely to occur, which form the basis for this conclusion.

The EPA review assessed the radiological effect of liquid and airborne releases from the reactor and the pathways by which exposure to the public could result. First, I would like to address release of waste water containing radionuclides. The two important radionuclides in L-Reactor liquid releases are tritium and radiocesium.

Some of the radioactivity produced in the reactor enters process water in the spent fuel disassembly pool. In prior operations, such water was periodically discharged directly to Steel Creek. The pool water following restart of the L-Reactor will instead be processed through filters and deionizers to clarify the water and to remove essentially all the particulate and soluble radioactivity, and will be discharged to seepage basins. This treatment will not remove tritium contained in the water. There are no feasible technologies available that would allow tritium to be collected and removed for alternate disposal.

The L-Reactor is expected to discharge up to about 10,500 curies of tritium annually to the seepage basin. About thirty percent of tritium discharged to the seepage basin from the L-Reactor (about 3200 curies each year) will evaporate from the basin. The remaining tritium, about 7,300 curies per year, eventually will seep into the ground below the basin. Along with the tritium there will be only a few tenths of a curie of other radionuclides discharged to the seepage basin. Ultimately the radionuclides will reach the water table at a depth of about 30 feet. The seepage basins are used at SRP to provide a delay between the time radionuclides in waste water are released from the facility and when they reach nearby onsite surface streams. This delay allows the radionuclides to decay and become less radioactive before reaching the streams. Short-lived radionuclides are held up in the soil for sufficient periods to decay to stable elements. Tritium does not totally decay during this transport process. It moves underground towards Steel Creek at the same rate as the groundwater. Enroute toward the creek, the tritium is diluted because it is mixed with large volumes of ground water.

As a result of the hold up and dilution processes, the seepage basins at SRP improve somewhat the control of liquids containing tritium and other radionuclides within the site boundaries. Earlier operations of the L-Reactor released about 8500 curies per year to Steel Creek, whereas it is estimated that future releases to Steel Creek will be somewhat less, or about 5700 curies per year. Steel Creek in turn enters the Savannah River.

Radiocesium is the second radionuclide which has received some public concern. Due to the addition of the filters, deionizers and the seepage basin in the liquid discharge path for the reactor restart, no significant new source of release of radiocesium will result. However, some of the radiocesium discharged to Steel Creek before 1970 and currently attached to sediments in Steel Creek will become resuspended due to the resumed flow of reactor plant heat exchanger cooling water to the creek. The inventory in the sediments is about 67 curies. DOE has recently estimated that approximately 5 curies of radiocesium will be resuspended in the Steel

Creek water during the first year of L-Reactor operation with substantial reductions in subsequent years. This appears a reasonable estimate to EPA. Some radiocesium may be redeposited in the swamp before reaching the river, some will be deposited in the sediments of the river and the remainder will be carried and diluted by the river flow.

The EPA National Interim Primary Drinking Water Regulations promulgated under the provisions of the Safe Drinking Water Act became effective in June 1977, and apply to the community water supply systems such as those at Beaufort-Jasper, South Carolina, and Port Wentworth, Georgia, downstream of the Savannah River Plant. These regulations include limits for radionuclides such as tritium and radiocesium that will limit radiation doses to water users to less than 4 millirem per year. Both these water supplies have been monitored by the States and radiation exposures in recent years have been about 0.28 mrem/year. Based on the expected releases from the restart of the L-Reactor, its contribution has been estimated at up to 0.04 millirem per year from tritium and radiocesium from the L-Reactor or a contribution of about one-seventh of the total. To put this in perspective, the total dose of about 0.32 mrem per year is about one-twelfth (1/12) of the EPA Drinking Water Standard and about one three-hundredth (1/300) of the natural background radiation in the area.

Monitoring

In the past, DOE, South Carolina and Georgia have conducted extensive radiological environmental monitoring in the vicinity of the Savannah River Plant. DOE has indicated it will continue studies to determine the movement and redistribution of radiocesium after L-Reactor startup. The results will aid in assessing the removal of radiocesium from the Steel Creek and in assessing radiological doses to individuals and populations off the site.

Radionuclides in effluents from SRP are analyzed at the point of release, in surface streams on the site before entry into the Savannah River swamp and in the river down stream from SRP. Many radionuclides that are measureable at the point of release are below the analytical limit of sensitivity after being diluted with river water. Only tritium and trace amounts of radiocesium are routinely measureable in the river.

In addition to DOE monitoring, the South Carolina Department of Health and Environmental Control (SCDHEC) and the Georgia Department of Natural Resources (GADNR) will continue to monitor both the air and water in the surrounding areas and downstream of the facility. The river is monitored periodically as part of a Statewide surveillance program. We understand that South Carolina plans to continue to monitor the river more frequently once the L-Reactor resumes operation. The results of the State's monitoring programs are published annually in their environmental surveillance reports. South Carolina and Georgia also have primary authority for ensuring that drinking water meets the EPA standards and consequently, they are required to analyze public drinking water supplies to ensure that they meet the EPA standards.

We believe that such monitoring will provide the continued assurance to the public of the control of liquid releases of radioactivity from the Savannah River Plant.

Air Emissions

Next, I will focus on releases of radionuclides to the atmosphere. I would note that EPA is required by 1977 amendments to the Clean Air Act to publish proposed standards for airborne emissions of radionuclides.

One of the various sources of radionuclides EPA is required to consider is DOE facilities. As part of our information collection activities to carry out this responsibility, EPA conducted a field study at the Savannah River Plant in December 1982. The objectives of the study were to compare DOE and EPA stack sampling techniques, field measurements, and airborne dispersion calculations. The study would assure that the plant and EPA are using comparable measurement and modeling techniques.

In conjunction with the field study and to support EPA's standards development program, EPA estimated the impacts of the projected airborne releases from the restart of the L-Reactor. These estimates were made by applying state-of-the-art environmental transport and dose assessment models. As in the liquid pathway, tritium releases are the predominant contributor to the airborne pathway. The results of this analysis indicate that the dose to maximum exposed individuals offsite will be about 0.57 millirem per year in the tenth year of L-Reactor operation. DOE estimated that the dose is about two times this amount or about 1.2 millirem per year. We consider this to be in reasonable agreement. Further, the difference may be explained by the fact that EPA calculated a dose to an adult while DOE calculated the dose to a child. This is approximately one percent of natural background radiation in the area.

We also calculated the cumulative dose to the entire population within 80 kilometers (about 50 miles) of the Savannah River Plant. The estimates by EPA and DOE of the population doses are in excellent agreement. EPA estimated 60 man-rem per year and DOE 67 man-rem per year from airborne releases for the tenth year of operation of the L-Reactor and its support facilities.

Summary

DOE analyzed releases from the restart of the L-Reactor to determine whether transport of radionuclides through all likely pathways would have a significant impact on public health. These analyses were all reviewed by EPA.

Our review of the DOE analyses and other available radiological data on the projected radioactive emissions from the restart of the L-Reactor does not indicate a significant additional radiological impact to the environment. The releases and likely impacts are expected to be well within applicable environmental standards. Consequently, the public should be sufficiently protected by the actions planned by DOE. Continuation of the radiological environmental monitoring programs by DOE and the States should provide added assurance to the public.

Enclosure No. 7

STATEMENT OF GOVERNOR RICHARD W. RILEY

DELIVERED BY

DAVID M. REID

EXECUTIVE ASSISTANT FOR ENERGY AND NATURAL RESOURCES
OFFICE OF THE GOVERNOR
STATE OF SOUTH CAROLINA

TO

UNITED STATES SENATE COMMITTEE ON ARMED SERVICES

NORTH AUGUSTA,
SOUTH CAROLINA

FEBRUARY 9, 1983

SUBJECT

ENVIRONMENTAL CONSEQUENCES OF
L-REACTOR OPERATION AT SAVANNAH RIVER PLANT

Governor Riley sincerely appreciates this Committee providing the opportunity, through the conduct of this hearing, for him and others to be heard on the very important matter of the proposed re-start of the L-reactor at the Savannah River Plant. In addition to the significant considerations of environmental impact, the legal and regulatory considerations arising from potential environmental impacts of this proposed action are significant in themselves.

Governor Riley, as a result of deliberations by state environmental regulatory officials, state legal officials and other counsel did, on January 11, 1983, conclude that the process provided through the preparation of an ENVIRONMENTAL IMPACT STATEMENT would be the best process available for assuring maximum public confidence in the final decisions of our national and state governments in this matter. Such a process can provide a central point where all relevant information can be presented, reviewed, debated and addressed. Such a central focus, where each and every relevant concern can be adequately and publicly addressed, does not now exist. In its absence, public concern is increasing commensurate with the degree to which that concern is not publicly addressed.

As Governor of the people of the State of South Carolina, Governor Riley desires not only that ultimate decision in this matter be correct---correct under the law and correct under environmental protection regulations---but that these decisions also enjoy the public confidence that they are correct. In his view, that public confidence can be maximized by a decision of the United States Department of Energy to not conclude its review and decision process with the ENVIRONMENTAL ASSESSMENT but to continue that process through the preparation of an ENVIRONMENTAL IMPACT STATEMENT. This open process allows for the public scrutiny of the assumptions and findings which support ultimate decisions. It will only be with such an open process that the necessary public confidence will be obtained.

On behalf of Governor Riley, I commend this Committee for recognizing, through the conduct of this hearing, the necessity of continuing the confidence of South Carolinians that their health and safety has been protected during all operations of the Savannah River Plant. However, that confidence will decrease as their concerns are, or appear to be, inadequately addressed. Governor Riley urges you to join his request that the United States Department of Energy immediately begin the preparation of an ENVIRONMENTAL IMPACT STATEMENT.

Thank you again for your invitation to Governor Riley to appear here today and for your allowing me to appear on his behalf.

Enclosure No. 8

SUMMARY OF TESTIMONY
T. TRAVIS MEDLOCK, ATTORNEY GENERAL
BEFORE THE SENATE ARMED SERVICES COMMITTEE
February 9, 1983

Senator Thurmond, Members of the Committee. I am grateful for the opportunity today to address the vital environmental interests of the State of South Carolina in the restart of the L-Reactor at the Savannah River Plant. As Attorney General and therefore chief legal officer of the State of South Carolina, I will set forth, in my testimony today, the state's legal interests as they relate to the environmental consequences of restarting the reactor. Those interests were set out, in part, in a resolution of ~~the~~ a task force of state agencies. ~~Budget and Control Board of the State of South Carolina~~. I have, for the Committee's records, a copy of that resolution.

I should point out, at the outset, that there is now litigation pending between the State of South Carolina and the United States Department of Energy concerning the restart of the L-Reactor. In that lawsuit, we are seeking the United States District Court for the District of Columbia to require the Department of Energy to prepare an Environmental Impact Statement or an adequate Environmental Assessment on the L-Reactor which would meet the criteria of the National Environmental Policy Act. Because of the ongoing litigation, I am precluded from publicly discussing matters related to that case, other than to quote from or make reference to public records.

The primary legal interest of the State of South Carolina in the restart of the L-Reactor is to insist that Congressional environmental policy and mandates be strictly observed in the construction and operation of all nuclear facilities in this State whether they are private or public facilities. Our concern more specifically is that the state's legitimate environmental concerns not be improperly subjugated to other important national policy objectives. To that end the State must assert its legal interest, using every proper means, to insure that national environmental laws are strictly observed in the restart of this reactor as well as in the development of all nuclear and other potentially hazardous facilities in this state.

The restart of the L-Reactor poses three immediate environmental concerns to the State of South Carolina. First, the reactor, as it is now designed, will discharge extemely hot reactor cooling water into a wetland stream which is a part of the Savannah River System. This engineering feature is intended apparently to use a stream and a substantial area of marshland as a natural heat sink to cool the reactor effluent. The environmental consequence is that plants and animals in this one thousand-acre area would be destroyed and that a natural watercourse of the State would be seriously degraded. There are, however, design alternatives that would eliminate this problem and that would comply more closely with federal environmental policy.

The second concern of the State of South Carolina in the restart of the L-Reactor is that a quantity of radioactive cesium-137 will be washed into the Savannah River and from there into the water supply downstream from the reactor. Reports on the significance of the cesium are conflicting. Nonetheless, there are also design alternatives for the reactor that would tend to reduce any threat to the environment from this source. This concern should be more fully addressed before the reactor is allowed to restart.

The third concern of the State, with the start-up of this reactor, relates to an inadequate containment system to prevent or minimize the accidental release of radioactive gases from the reactor. I am aware of arguments as to why containment domes are not generally used in production nuclear reactors such as the L-Reactor. However, in light of the concentration of production nuclear reactors in the State of South Carolina, and in light of the legitimate concern that the people of the state have over the possibility of accidental discharge of radioactivity into the environment, this matter warrants further attention by those who would operate such facilities in this State.

These are some of our immediate environmental concerns with the restart of the L-Reactor. I am grateful for the opportunity to express them to this Committee. I would hope that our vital need for clean water, clean air, and an environment free of radioactive contamination not be forgotten in the pursuit of other national policy objectives at the Savannah River Plant. Thank you.

The executive task force met on Thursday, December 9, 1982, and reached agreement on the following points and recommendations to be made to the State Budget and Control Board:

1. The State of South Carolina has important legal and regulatory rights and responsibilities with respect to the proposed reactivation of the L-Reactor by the United States Department of Energy at Savannah River Plant;

2. It is and should be the policy of the State and its regulatory agencies to require governmental actions affecting South Carolina's natural, human and cultural resources to meet the same standards of environmental protection as would be required of actions by private industry or enterprise having an equivalent effect on the environment;

3. The State and its agencies feel that it is essential to take appropriate steps to assure that all state and federal regulatory and permitting procedures are followed with respect to the proposed reactivation of the L-Reactor;

4. In order to assure that the interests of South Carolina will be adequately and properly protected with respect to the proposed reactivation of the L-Reactor, the State should institute an independent legal action to assure compliance with the law by the Department of Energy;

5. It is in the interest of South Carolina for the responsible state agencies to take a unified position in any litigation concerning the L-Reactor.

IT IS THEREFORE RECOMMENDED that the State Budget and Control Board request the Attorney General to review the matter and report back to the State Budget and Control Board appropriate action to assure protection of South Carolina's natural, human, and cultural resources and the integrity of the State's governmental and regulatory processes.

Enclosure No.9

Office of the Governor
Atlanta, Georgia 30334

Joe Frank Harris
~~[illegible]~~
GOVERNOR

February 4, 1983

The Honorable J. Strom Thurmond
Senator, United States Congress
209 Russell Senate Office Building
Washington, DC 20510

Dear Senator Thurmond:

This will acknowledge the receipt of your letter of January 11, 1983, in which you were kind enough to invite us to participate in the upcoming public hearing in North Augusta, South Carolina, on February 9, 1983. I want to express my appreciation for your time and effort in conducting the hearing on issues related to the Department of Energy's Savannah River Plant so that concerned Georgia and South Carolina citizens can provide input to the Committee on Armed Services.

Whereas I am personally interested in the hearing process and its outcome, my schedule will not permit me to attend. Since the Georgia Radiation Control Act provides that the Environmental Protection Division of the Department of Natural Resources shall represent the State at hearings which involve nuclear facilities, I have designated Mr. James L. Setser of that Agency to represent me at the hearing in North Augusta.

As you may know I, as well as former Governors Jimmy Carter and George Busbee, have notified officials of the Department of Energy on a number of occasions about our concerns regarding Savannah River Plant operations. Copies of this correspondence which describe Georgia's policy positions are being provided to you for inclusion in the printed hearing record. These policy positions are generally summarized in the following paragraphs.

First, the State of Georgia has been concerned for some time about the potential storage or disposal of high level nuclear wastes in the bedrock at the Savannah River Plant. Because of the potential for contaminating the groundwater that serves the southeastern part of our State, we are unalterably opposed to the disposal of such wastes in any form in the bedrock at the Savannah River Reservation.

Second, we continue to emphasize that the Department of Energy should, with the assistance of other Federal agencies, identify and submit for public review the cumulative effects of all the present and proposed facilities at the Savannah River Plant. This study should also consider contiguous commercially operated and proposed facilities which come under the stetutory authority of the U.S. Nuclear Regulatory Commission.

Third, we view the specific L-Reactor issue as a matter between the Department of Energy and the State of South Carolina. In this respect, Georgia supports South Carolina's efforts to ensure the protection of the groundwater and the Savannah River in the vicinity of the Savannah River Plant.

In closing, please accept my best wishes for a successful dialogue on February 9th and I look forward to learning of the Committee's conclusion in this important matter.

With kindest regards, I remain,

Sincerely

Joe Frank Harris

JFH:jsm
cc: Honorable Richard Riley
Honorable Mack Mattingly
Honoreble Sam Nunn
Honorable Douglas Barnard, Jr.
Honorable Lindsay Thomas
J. Leonard Ledbetter

Office of the Governor
Atlanta, Georgia 30334

George Busbee
GOVERNOR

January 6, 1983

Honorable Donald Paul Hodel, Secretary
U.S. Department of Energy
Washington, D.C. 20585

Dear Secretary Hodel:

This will acknowledge the receipt of your letter of December 15, 1982 regarding our concerns about the potential contamination of Georgia's water resources from activities at the Savannah River Plant. I appreciate your efforts in responding to the issues raised in my October 26, 1982 letter to former Secretary Edwards.

With respect to bedrock storage of nuclear wastes at the Savannah River Plant we are pleased and encouraged by your statement that this disposal option will not be pursued. However, we still have a concern, since bedrock storage at SRP has been described as the most cost effective disposal option, that the administrative decision not to pursue it may be subject to change at some future time. It is for this reason that I am now renewing my earlier request, as expressed in my January 11, 1980 letter to Ms. Ruth Clusen of DOE, that the bedrock storage option be formally designated as a "No Action Alternative" in accordance with the NEPA process.

The environmental monitoring program that you described in your letter is commendable. In addition, the fact that your program identified a problem with the seepage basins and took steps to cease the use of these facilities also demonstrates your Agency's willingness to follow through with corrective actions. Let me urge you to build additional public credibility by conducting a more extensive study of the existing levels and subsequent dispersion of the contaminants in the groundwater of the area.

As I indicated in my recent letter to former Secretary Edwards, it is the responsibility and obligation of DOE to demonstrate effectively that control measures are in place to prevent the contamination of our environmental resources. Even though the tritium levels that are currently observed in milk and drinking water do not exceed federal standards they are, nontheless, considered to be significant and worthy of your efforts to demonstrate further reduction. Otherwise, expansion of facility operations at SRP will only serve to increase the current radioactivity levels in the environment to the point where federal standards may be exceeded.

With respect to a cumulative effects study, I appreciate your statement that this has already been addressed. Whereas such may be the case, sufficient documentation outside of the piecemeal approach has not been provided to the public. As an example, two new potential facilities at SRP have been announced for the first time since my October 26, 1982 letter to former Secretary Edwards. Again I must reiterate that the continuation of this approach will only serve to further reduce public confidence in the federal government's credibility.

In conclusion, while DOE has made some progress in considering Georgia's concerns, there is still considerable room for demonstrating further improvements. We look forward to your continued progress in these areas.

With kindest regards, I am

Sincerely,

George Busbee

George Busbee

GB/jsm

Office of the Governor
Atlanta, Georgia 30334

George Busbee
GOVERNOR

October 26, 1982

Honorable James Edwards, Secretary
United States Department of Energy
Washington, D.C.

Dear Secretary Edwards:

As you know, the State of Georgia has been concerned for several years about the operations at the Department of Energy's Savannah River Plant with respect to the impact on Georgia's environment. I, as well as former Governor Carter, have expressed these concerns on many occasions to officials of DOE and its predecessor Agencies. In light of the projected new facility operations at the Savannah River Plant that have recently been brougnt to my attention, it is timely that Georgia's position be updated and reaffirmed in these matters.

First, the State of Georgia is unalterably opposed to the bedrock storage of high level radioactive wastes at the Savannah River Plant. Even though DOE staff members have stated that they do not have plans to construct such a facility at SRP, I have not received any response to our request that bedrock storage be formally designated as a "no action" alternative for future disposal. Therefore, I can only draw the conclusion that DOE intends to keep the concept as a viable option and at some future time pursue the funding to construct the facility. Consequently, I feel it is necessary to restate our unalterable position to bedrock storage at SRP because of the potential for contaminating the groundwater that serves Georgia.

Second, in January of 1975, Governor Carter notified the Atomic Energy Commission that Georgia would oppose any further concentration of major nuclear facilities in the Savannah River Basin until more effective control of radioactive substances has been demonstrated for existing facilities. Since that time SRP has continued to discharge radioactive isotopes, along with other chemicals, into seepage basins on the plant property. Recently the U.S. Environmental Protection Agency and the State of South Carolina have expressed their concern about their data which indicate that the groundwater in the area is contaminated and that some migration has already taken place. In addition, as a result of both routine and accidental releases of radioisotopes from the Savannah River Plant, the data from the Georgia Environmental Radiation Surveillance Network show tritium levels in milk and drinking water up to fifty times background. Therefore, since DOE has failed to demonstrate more effective control of releases from the existing plant facilities at SRP, I must reaffirm Governor Carter's earlier position that Georgia will remain opposed to any additional plant expansions until such time that such control has been demonstrated.

With regard to defense operations, I have always been supportive of a strong national defense posture for the United States, and I am aware that many of the proposed facility expansions at SRP will assist the U.S. Government in meeting that objective. However, in doing so, assurances must also be provided to the public that adequate health and safety protective measures are being put in place. The continuation of the piecemeal approach that has been used by DOE and its predecessor Agencies in the past in dealing with environmental concerns will only serve to further reduce public confidence in the federal government's credibility. I strongly urge that the Department of Energy consider the cumulative effects of all the present and proposed facilities at SRP as well as those of contiguous operations such as Georgia Power Company's Plant Vogtle and the Allied General Nuclear reprocessing facility at Barnwell, South Carolina.

Finally, the Savannah River is a very important fresh water resource for the citizens of Georgia and South Carolina. Its importance as a potable water supply is far too great to consider it as a disposal system for radioactive waste. It is the responsibility and obligation of DOE to demonstrate effectively that control measures are in place to prevent the contamination of one of the most valuable water resources in the southeast.

In summary, I look forward to hearing from you on the action you plan to take, regarding these priority areas, to ensure that our water and air resources remain uncontaminated.

With kindest regards, I am

Sincerely,

George

George Busbee

GB/jsm

Office of the Governor
Atlanta, Georgia 30334

George Busbee
GOVERNOR

January 11, 1980

Ms. Ruth Clusen
Assistant Secretary for Environment
United States Department of Energy
Washington, D.C. 20585

Dear Ms. Clusen:

This is to advise you that we have completed a review of the Final Environmental Impact Statement, DOE/EIS-0023, for the Long-Term Management of Defense High-Level Radioactive Wastes at the Savannah River Plant.

As I indicated to you in my letter of September 24, 1979, the State of Georgia has serious concerns about any disposal of radioactive wastes in the vicinity of aquifers. Specifically because of the potential for contamination of the Tuscaloosa Aquifer, we are opposed to a site specific proposal for bedrock storage at the Savannah River Plant. The concerns that we expressed regarding the information in the draft Environmental Impact Statement were not properly addressed in the final document.

Because of the failure of the Department of Energy to resolve these critical issues, I am requesting that you take the following action:

(a) The environmental impact statement should be completely rewritten such that the disposal aspects are not confused with the purpose for which program funds are being sought, waste immobilization.

(b) Because of the potential consequences of the contamination of the groundwater which serves Southeast Georgia, the bedrock storage alternative for the Savannah River Plant must be designated by Department of Energy as a "No Action" alternative before program funds are made available to study the waste immobilization aspects.

Whereas Georgia is pleased to be able to provide input to the Department of Energy on this important matter, I must insist that you provide us with written assurances that the bedrock storage of nuclear wastes at the Savannah River Plant will not be retained further as a disposal option before program funds are provided for further work on waste immobilization. I look forward to hearing from you in the near future on this matter.

Sincerely,

cb 1/15/80

George Busbee

GB/jsm

cc: Joe D. Tanner
J. Leonard Ledbetter
W. H. Pennington

STATE OF GEORGIA REVIEW COMMENTS

FINAL ENVIRONMENTAL IMPACT STATEMENT "LONG-TERM MANAGEMENT OF DEFENSE HIGH-LEVEL RADIOACTIVE WASTES-SAVANNAH RIVER PLANT: AIKEN, S. C."

1) Department of Energy's response to Georgia's comment (DOE # P-2) regarding the purpose of the Environmental Impact Statement does not clarify the issue. In the final document, DOE contends that the purpose is a research and development program aimed at waste immobilization. In fact this has been incorporated into the title of the report. However, the alternatives that are discussed in the body of the EIS are not for solidification but rather for disposal after immobilization in glass. Since two of the four disposal alternatives include site specific bedrock storage at the Savannah River Plant and are retained as future options by Department of Energy, we have no choice but to conclude that Department of Energy is attempting to gain authority to actively pursue bedrock storage under the guise of a primary objective, waste immobilization. The fact that Department of Energy contends that specific budget dollars are not being requested for bedrock storage at this time is considered inconsequential.

2) Department of Energy's statement in its response to Georgia comments P-1 and P-3 leaves the impression that all work stopped on any bedrock storage effort in 1972 and that there are not any current plans for pursuing this matter. This response is inconsistent with previous information regarding the issue. This inconsistency is evidenced by the following:

   (a) In the report, WASH 1530 entitled "Environmental Statement-Additional High-Level Waste Facilities at the Savannah River Plant" which was published in 1974 indicates that several long-term options for Savannah River Plant wastes are being investigated. "These include . . . storage in either near-surface retrievable storage facilities or in deep geological formations either on site or at another location." WASH 1530 also indicates that the further consideration of storage on site in deep geologic formations is just being deferred in favor of a higher priority.

   (b) In 1976, the technical report, ERDA DP-1438, entitled "Technical Assessment of Bedrock Waste Storage at the Savannah River Plant" was published. The fact that work was performed in putting together this technical report is in direct conflict to Department of Energy's response statement, "... and all work on the bedrock disposal concept was stopped in 1972."

   (c) In Appendix A of the Final EIS, Department of Energy states that bedrock disposal is retained among the alternatives so that a full range of cost and risk differences among the feasible alternatives may be presented. In other words, Department of Energy is retaining the option of bedrock storage even though the United States Environmental Protection Agency has stated that the site specific concept at Savannah River Plant is "Environmentally Unsatisfactory."

This follows the same pattern established by Department of Energy's predecessor, the Atomic Energy Commission, when it refused to accept the majority recommendation of National Academy of Science's Committee on Geologic Aspects of Radioactive Waste Disposal when it was recommended in 1966 that the bedrock waste program at Savannah River Plant be discontinued.

3) The Final EIS still contains the statement: "There are no substantial environmental impacts associated with nuclear radiation for any of the three alternatives". In commenting on this same statement which appeared in the draft document, Georgia pointed out that the statement is incorrect because of the potential impacts of a bedrock storage facility on the Tuscaloosa Aquifer. Department of Energy responded by stating that the basis for this comment is discussed in Section XIII of the final EIS and is related to the comparison of the off site risks from the alternatives with risks from natural background radiation. This is an unacceptable response. The statement in question appears in the Summary of the EIS and can definitely be construed to mean that there are not any adverse environmental impacts associated with bedrock disposal. The statement is strategically placed in the document such that it will have a misleading effect on a decision maker who doesn't have the time and expertise to read the entire document in detail until he comes to Section XIII at the end for a complex interpretation. The statement also conflicts with EPA's categorization of any bedrock disposal option at Savannah River Plant as "Environmentally Unsatisfactory".

4) In reviewing the draft EIS, Georgia expressed strong reservations and concern about Department of Energy's treatment of the groundwater flow patterns related to the Tuscaloosa aquifer (See Comment P-5). Department of Energy's response is definitely unacceptable to Georgia. Not only is Department of Energy's response incorrect but their data is obsolete. Department of Energy attempts to convey the idea that the entire groundwater system is discharging into the Savannah River. This is a rather simplistic concept and really doesn't consider the character of dynamic aquifer systems. The following detailed discussion is presented to indicate the gross improper consideration of the whole issue by Department of Energy:

   (a) Referring to page III-7 of the Final EIS; While some movement of groundwater is reasonable, at least seven aquifers are identified (Bedrock Aquifer, Lower Tuscaloosa, Upper Tuscaloosa, Ellenton, Congree, McBean, and the Barnwell Aquifer). There is no discussion or evaluation presented in the EIS as to whether these aquifers behave as a single entity, whether or not they are artesian, or whether or not they are hydraulically interconnected.

   (b) On pages III 7,8, and 9, the discussion of downward percolation is irrelevant and has no significance on any evaluation of contaminants in the groundwater regime. Figure III-4 does not illustrate downward percolation but rather illustrates the normal variation of the potential surface (i.e., water levels).

(c) On page III-9 the discussion in the last paragraph of the Hydrology Section indicates that water from the Tuscaloosa Formation flows into the Savannah River. However, it is noted that the Tuscaloosa is at a depth of 100 to 600 feet below sea level. It is highly unlikely that water would flow from a depth of 600 feet below sea level "uphill" through several clay layers into the Savannah River. Figure III-5 implies that groundwater more or less flows into the river valley and sits there between Augusta and the northern plant boundary. Recent mapping of the potentiometric surface by the Georgia District of the U.S. Geological Survey suggests that groundwater is funneled along the Savannah River Valley southeastward to the Atlantic Ocean. Thus the Department of Energy responses to Georgia comments (P-5, P-25, and P-27) are based on relatively out-of-date geologic information. The recent work of the U.S. Geologic Survey in the coastal Plains of Georgia clearly indicates many instances of interformational leakage and that localized circulatory systems within the cretaceous-Tertiary aquifer are not probable.

(d) The text of the EIS makes no mention of the accelerating groundwater use in this area. Detailed studies by Georgia and the U.S. Geologic Survey indicate that the Savannah River Plant is adjacent to the high irrigation water use zone. It is very probable that groundwater flow directions will change substantially in the future in response to high irrigation pumpage.

5) In reviewing the Draft EIS, Georgia pointed out that the seismicity section was completely inadequate (Comment No. P-6). In responding to this comment in the Final EIS, Department of Energy stated that the detailed site seismic data is included in ERDA-1537 and is incorporated in this EIS by reference. Department of Energy does not make mention of the fact that ERDA-1537 was classified by the U.S. Environmental Protection Agency as Category 2 (Insufficient Information). While there are many areas of inadequacy that have been previously enumerated by both EPA and Georgia, only one example is presented with more specificity at this time as evidence of Georgia's contention. The isoseimal maps of the Charleston Earthquake published by Dutton in 1899 indicate that an Intensity VII earthquake would be felt at what is now the Savannah River Plant site. According to Coulter, Waldren, and Devine, in their work published in 1973, acceleration for such as an earthquake would be 0.05 g to 0.20 g, or up to four times the value indicated by Department of Energy in the EIS.

6) In regard to the subject of risk factors, Department of Energy's response to Georgia's comment (P-17) as it relates to the Tuscaloosa Aquifer, is improperly presented. Department of Energy contends that it knows the risks with a high degree of certainty from experience with operations of similar facilities. Department of Energy has not presented any data from the operation of a bedrock storage facility underneath an aquifer such as the Tuscaloosa. In fact, to the best of our knowledge, there has never been a bedrock storage facility in existence anywhere from which operational data could be obtained. Department of Energy also points out that other risks, such as those from sabotage, are known with less certainty. Georgia's comment did not mention sabotage but rather the consequences of the wastes migrating into the aquifer. The EIS, itself, states that these consequences are very high.

Office of the Governor
Atlanta, Georgia 30334

George Busbee
GOVERNOR

Norman Underwood
EXECUTIVE SECRETARY

January 8, 1979

Mr. W. H. Pennington, Director
Division of Program Review and Coordination
Office of NEPA Affairs
Department of Energy
Washington, D. C. 20545

Dear Mr. Pennington:

In August, 1978 the Georgia State Clearinghouse received a copy of DOE/EIS-0023-D, entitled "Draft Environmental Impact Statement - Long Term Management of Defense High-Level Radioactive Wastes at Savannah River Plant." As you know, in my letter of August 10, 1977 to you, I transmitted extensive detailed comments provided by our technical staff on a preliminary report, ERDA 77-42/1 and 2, on the same subject as the recent Draft EIS (see attached).

Even though you initially expressed a desire to have comments from Georgia by November of 1978, we have waited until now to complete our review of the Draft EIS because we also wanted to compare the policy aspects with the recent document, "Report to the President by the Interagency Review Group on Nuclear Waste Management." Our technical staff has now completed its review and prepared the attached comments.

The efforts by the DOE at the Savannah River Plant are inconsistent with the IRG Report to the President in that they represent a uni-lateral approach to the continued advancement of a bedrock storage concept for SRP high level wastes. Also, DOE has proceeded to spend the taxpayers' money to foster the bedrock storage concept in spite of strong opposition by the State of Georgia, the U. S. Environmental Protection Agency, and the National Academy of Sciences. As I indicated in my letter to the former Administrator of ERDA, Dr. Seamans and again, in my August 10, 1977 letter to you, Georgia is unalterably opposed to any repository that could conceivably result in the radioactive contamination of Georgia's underground water resources. It is quite apparent that DOE is proceeding to further develop a bedrock storage facility at the Savannah River Plant with a complete disregard of Georgia's position and concern in the matter. You are advised that I am requesting the Georgia Attorney General to become thoroughly briefed on DOE's efforts in the event that Georgia has to exercise all available options to protect the health and safety of the citizens of our State.

I would appreciate your timely and substantive response to Georgia's position in this highly important matter.

Sincerely,

George Busbee

GB/jsm

Office of the Governor
Atlanta, Georgia 30334

George Busbee
GOVERNOR

Norman Underwood
EXECUTIVE SECRETARY

June 28, 1977

Mr. Marcus A. Rowden, Chairman
U. S. Nuclear Regualtory Commission
Washington, D.C. 20555

Dear Mr. Rowden:

I appreciate your request for Georgia's views regarding the current allocation of regulatory authority between the federal government and the states under the Atomic Energy Act, as intended by Congress and as interpreted thus far by the courts.

Our basic concerns relate to the contamination of Georgia's natural resources such as the air, water, and land which establish pathways for exposure of our citizens to radiation. Accidental discharges of radioactivity to the air and water of our State have occurred from an ever increasing concentration of nuclear facilities in the Savannah River Basin. Other proposed facilities such as the Barnwell Reprocessing Plant, additional generating plants in South Carolina, and a variety of proposed waste storage facilities have increased our awareness and concern for proper control of both liquid and gaseous wastes. In January of this year the Oconee Power Plant in South Carolina had an unauthorized discharge of liquid radioactive waste to a stream that goes to Lake Hartwell which serves as a water supply for the City of Hartwell, Georgia. Georgia officials were not notified and only found out about it when a press release appeared in the local newspaper over a month after the occurrence.

Presently, we are concerned that the Federal Government may attempt to locate a repository site for storage of high level radioactive waste in our State or in the Savannah River Basin. As you know when Jimmy Carter was Governor of Georgia, he established a position of opposition to any further concentration of nuclear facilities in the Savannah River Basin until more effective control of radioactive substances has been demonstrated at existing facilities. In addition he strongly opposed a proposed bedrock storage facility at the Savannah River Plant and I have reaffirmed that unalterable position because of the potential contamination of the fresh water aquifer in the area which serves all of southeast Georgia. Another concern we have for a proposed Federal Repository in the Southeast is with the transportation of spent fuel and other high level wastes through Georgia. Neither the Nuclear Regulatory Commission nor the U. S. Department of Transportation have an administrative, regulatory, or other management information system that adequately keeps track of such shipments. As a result any accident which might occur could contaminate our water supplies or other natural resources to the point where certain areas of Georgia could be destroyed economically before anyone even knew that high level waste was on a particular highway.

We are not opponents of the nuclear industry, nor do we desire to become opponents. We look upon our own Georgia Power Company, with its nuclear generating units, as a very valuable resource, and we desire to take all reasonable measures to assist that company to best perform its necessary function. Our main concern stems from the fact that we often seem to have too little right of decision in regard to the establishment, location and operation of nuclear facilities in and around our state. Too often, we find ourselves in a defensive posture regarding such matters, attempting to protect our people and natural resources after decisions have been made, instead of having a strong voice in the decisions themselves.

I am satisfied that we are fully capable of assuming a much larger role in the proper development and regulation of the nuclear industry in our state and region. Our professional and technical resources have improved greatly over the past several years, as well as our regulatory system, and further improvements will be made shortly. I feel strongly that the present allocation of authority under the Atomic Energy Act does now require substantial revision, especially so that we may participate together in the sound development of a necessary industry instead of becoming opponents.

Specifically, I am greatly concerned regarding the need for revision in two particular areas. The first involves siting of nuclear facilities of all kinds, either in our own state or in nearby locations that may affect our people or our natural resources. Nobody in Washington can appreciate as well as we do the extent of our resources or their relative importance and sensitivity to harm. We are also the best judge of the likely extent and areas of future population and industrial growth in Georgia, and of the need to reserve and protect specific areas for that purpose.

In brief, I feel strongly that we must have full and unchallenged freedom to determine the suitability of sites in Georgia for any kind of nuclear facility, whether federal or industrial, and should it become necessary, the clear power to veto any site that we deem unsuitable for any reason. In addition, we need the clear right to reach siting agreements with neighboring states, and within our region, that will be equally binding upon the nuclear industry and upon the federal government.

The second area of great concern to me involves the regulation of established operating nuclear plants. For the same reasons as outlined above, I feel that we must have the clear and unchallenged right to enact and enforce more restrictive regulatory practices than those of the federal government, should we deem such to be necessary in specific situations. We need the companion right to reach regulatory agreements with neighboring and regional states in this regard also.

I realize that such revisions to current practice would be substantial, and would place considerable additional responsibility upon the states. However, without such freedom of self-determination I feel certain that the persistent public mistrust of the nuclear industry, and opposition to it, will continue to grow, as it is doing here. If this necessary industry is eventually to flourish, instead of being smothered, these revisions appear to me to be vital.

I hope that you will find the foregoing comments helpful in your analysis. We appreciate the invitation to participate. Please let me know if Georgia can be of further assistance.

Sincerely,

George Busbee

GB:egb

Office of the Governor
Atlanta, Georgia 30334

George Busbee
GOVERNOR

Norman Underwood
EXECUTIVE SECRETARY

January 25, 1977

RECEIVED
JAN 27 1977
ENVIRONMENTAL PROTECTION
DIVISION
NATURAL RESOURCES

Dr. Robert C. Seamans, Jr., Administrator
U.S. Energy Research & Development Administration
Washington, D. C. 20545

Dear Dr. Seamans:

Your recent letter, with attachments, regarding ERDA plans for establishing bedrock storage as a part of the National Waste Terminal Storage program for high level radioactive wastes from the nuclear power industry has been reviewed by staff of Georgia's Department of Natural Resources, Environmental Protection Division. We have the following comments and questions regarding those plans.

First, and of greatest importance, as we indicated several years ago, Georgia is unalterably opposed to any repository that could conceivably result in the eventual radioactive contamination of Georgia's underground water reserves, whether such repository be proposed in Georgia itself or in any neighboring state. As you know, Georgia's position on bedrock storage at the Savannah River Plant was established in 1972 by Governor Carter and as the current Chief Executive of State of Georgia I strongly reaffirm that position. You will note that Governor Carter's concern for the Tuscaloosa aquifer was also shared by EPA in 1972 when the Agency's senior staff warned that any proposal for storage of radioactive waste in the proximity of the aquifer would be viewed with extreme caution. Our great natural groundwater resource is regarded as vital to the projected orderly growth and development of Georgia, and no possibility of contamination, no matter how small the calculated statistical odds may be made to appear, can be tolerated.

We are pleased to learn from your letter that the "generic" draft EIS now in preparation will not be used as a device to replace future site-specific EIS's. However, we are deeply concerned regarding your subsequent indication (page 2) that:

> "Public hearings on the respective drafts will also be convened if deemed appropriate and in the public interest."

I can state now that we will regard such public hearings as an absolute necessity, and will insist that they be convened in regard to any proposed National Waste Terminal Storage site that may affect Georgia's natural resources or welfare.

In regard to the participation of Georgia in the development of site selection criteria, as invited in your letter, it is requested that you clarify the paragraph on page 3:

"It is ERDA's position that the project will be terminated if the State raises issues on the project connected with these criteria, and their application, that are not resolved through mutually accepted procedures."

Specifically, does the above statement mean that any state, such as Georgia, will be able to exercise a unilateral veto regarding a proposed site that could affect its welfare? Or, does it mean that a proposed project will be terminated if a state does not agree to a specific criterion? Or does the above statement merely mean that after site selection criteria have been chosen by ERDA, or by some sort of majority vote, a proposed project will be terminated only if a state can prove that one of the criteria is not met?

I will greatly appreciate receiving your early clarification of the above statement, and will trust that such a description of how your procedure is intended to work will provide clear answers to the above questions.

In reviewing your Enclosure A which summarizes planned activities in Georgia, the proposed studies for FY-1977 do not appear to incorporate seismology. We are very much concerned with the potential for earthquake activity in Georgia and in neighboring states, especially South Carolina, and the extent to which our groundwaters can be protected against major quakes. Again, we are not so much concerned here with what may appear to be the statistical odds as we are with the positive protective measures that are feasible, and their likely efficacy.

We have noted your statement that the proposed National Waste Terminal Storage repositories may be used for the final storage of spent fuel elements. Since a major problem is the lack of commercial fuel reprocessing and a fast breeder reactor due to uncertain technology in both areas, we question the practicality of selecting site criteria, much less designing a repository when the exact nature of the material remains unknown. We feel it is important to stress the undesirability of an overly hasty process of selecting site criteria for National Waste Terminal Storage repositories.

Please be assured of Georgia's sincere desire to be as cooperative as possible in achieving our national goal of energy independence. President Carter has stressed that the present administration will change the priorities for these programs and we know you will be responsive to these changes.

I will await your response to our comments and questions with a high degree of interest. After receiving that response, I will be much better able to reach conclusions as to the most fruitful way in which Georgia might best participate in your efforts to develop an acceptable solution to the problem of ultimate disposition of high level wastes from reactors.

Sincerely,

George Busbee

George Busbee

GB:cl

xc: Ga. Congressional Delegation
Dr. Carl W. Kuhlman
Mr. J. Leonard Ledbetter
Ms. Omi Walden

Executive Department
Atlanta 30334

Jimmy Carter
GOVERNOR

Frank Moore
EXECUTIVE SECRETARY

January 6, 1975

Mr. Robert M. Lazo, Esquire
Chairman
Atomic Safety & Licensing Board Panel
U. S. Atomic Energy Commission
Washington, D.C. 20545

Dear Mr. Lazo:

We have reviewed available material regarding the Barnwell Nuclear Fuel Plant (BNFP), including testimony presented at the recent Hearings on construction and operating licenses for that facility. We are convinced that Georgia has strong reasons to be concerned about the Barnwell plant and about the tendency to concentrate major nuclear installations of that kind adjacent to Georgia in South Carolina.

Specifically, we are concerned about the continuing buildup of such facilities bordering the Savannah River, in terms of the increasing potential for direct radiation exposure of Georgia citizens, the probable continuing buildup of radioactive contamination of the Savannah River, and the steadily increasing risk of a major nuclear accident that could greatly affect Georgia people and Georgia's natural resources.

As the result of our thorough review of the available material and of the testimony presented thus far, I feel that the following requests are necessary to serve the best interests of Georgia, and trust that they will, therefore, receive your most serious consideration.

1. It is requested that AEC require the immediate installation of equipment to remove krypton-85 from the gaseous plant wastes at the BNFP, and to store the collected gas in a safe manner at the site until long-term storage facilities can be made available.

   We believe that the necessary technology for krypton-85 collection, containment and storage is currently available, to the extent that only full-scale installation and operation at a nuclear fuel recovery plant remain to be done. Testimony at the recent Hearings to the effect that a pilot-scale plant (10 percent of full capacity) should now be tested, and that a full-scale installation will require 10 more years, has the familiar sound of earlier times when environmental protection measures of any sort could never be installed because more research was always needed.

2. It is requested that AEC require the immediate initiation of a serious research and development program to provide as soon as possible for effective collection, containment and storage of tritium at the BNFP; it is further requested that AEC take similar action to reduce tritium discharges from the SRP.

It is recognized that the technology for tritium removal and containment is not immediately available for a nuclear fuel recovery plant. However, the projected release from the BNFP is large, about 700,000 curies/year; this is approximately equal to current normal releases from the SRP, to say nothing of the recent 500,000 curie "accidential" release, and the combined normal tritium discharge from the SRP-BNFP complex can be expected to approach 1,500,000 curies per year. Most of it will be released as water vapor, at least in part, because the quantities are too large for discharge into nearby creeks without exceeding acceptable limits for the concentration of tritium in water. However, whether it is released as water vapor or directly to a nearby watercourse, the entire discharge enters the hydrologic cycle. We regard the projected doubling of tritium discharges at this location as highly undesirable.

3. It is requested that AEC require the operator of the BNFP to provide a complete and detailed plan for emergency action in the event of a major accident involving the escape of a large amount of radioactivity to the environment; such plan should incorporate immediate notification of responsible authorities in Georgia, as well as in South Carolina, and should be adequately coordinated with other existing federal and State emergency programs and systems.

During operation, tremendous quantities or radioactive fission products, as well as large amount of fissionable material, will be stored on site at the BNFP. Even though the AEC assessment of the likelihood of a major accident involving a large release of radioactivity to the environment indicates that no such event should occur, it is not conservative to assume that a major accident is truly impossible, or that a plant is absolutely safe. It seems conceivable, for example, that the "impossible" earthquake, or deliberate sabotage, could lead to a large release of radioactivity. Under such circumstances, it is only prudent to plan for the event, even though it is not expected, and to be fully assured that nearby populations and natural resources can be adequately protected.

4. It is requested that AEC require the BNFP operator to conduct sufficiently detailed and extensive effluent and environmental monitoring programs, both pre- and post-operational, to be certain that all environmental radioactivity originating at the Barnwell facility can be distinguished, identified and quantitatively accounted for; it is further requested that AEC undertake similar action as regards radioactive releases from the SRP.

In view of the growing number of major sources of radioactivity in the area, and the announced plans of the Georgia Power Company for a major nuclear power station across the River, it is regarded as imperative that each facility be able to fully distinguish their own wastes in the environment, so that there can be strict accountability as regards environmental impact. It should be noted that the common practice of gross assay of samples for kinds of radioactivity (alpha, beta, gamma) cannot be sufficient to establish accountability, and hence, that a substantial amount of quantitative isotopic analyses will be necessary.

I feel it necessary to inform you that Georgia will oppose any further concentration of major nuclear facilities in the Savannah River Basin, at least until more effective control of krypton-85, tritium and other radioactive substances has been demonstrated at existing facilities.

At this time, the State of Georgia requests permission to participate in the Barnwell proceedings as an interested state in accordance with § 2.715(c) of the Rules of Practice as set forth in the Rules and Regulations (Title 10 - Atomic Energy) for the U. S. Atomic Energy Commission. Please address all correspondence pursuant to this request to: Mr. J. Leonard Ledbetter, Director, Environmental Protection Division, 270 Washington Street, S.W., Atlanta, Georgia 30334.

Thank you for your assistance.

Sincerely,

Jimmy Carter

Jimmy Carter

JC:seh
cc: Dr. Dixie Lee Ray
Mr. Manning Muntzing
Honorable George Busbee, Governor-Elect

RECEIVED
JAN 27 1975

Enclosure No. 10

STATEMENT OF SENATOR ERNEST F. HOLLINGS
BEFORE THE SENATE COMMITTEE ON ARMED SERVICES
NORTH AUGUSTA, SOUTH CAROLINA
FEBRUARY 9, 1983

Mr. Chairman, other members of the Committee:

I appreciate this opportunity to comment on a subject of considerable importance to the people of South Carolina -- the Energy Department's refusal to prepare a full environmental impact statement on the proposed reopening of the Savannah River Plant's L-reactor.

To begin with, I want to commend the Committee for holding this hearing. Concern about the possible environmental effects of the L-reactor runs high in South Carolina, and a full public airing of the issues is needed. In particular, the Energy Department, its critics, and State officials all should have every opportunity to present their views. This hearing will help with that process.

Next, let me reiterate and expand on the points I made in my December 7, 1982, letter to Secretary of Energy Donald Hodel, in which I called on him to prepare an environmental impact statement on the reactor. The most important point is that the Energy Department's credibility in South Carolina is at stake, and that public support for the Department's activities is in jeopardy. There are three reasons why. First, many of us have serious concerns about the possible effects of the facility on public health and the environment. I, for one, would like to see a documented study of where radioactive cesium from the reactor site would go, whether it could get into either water supplies or the food chain, and what steps, if any, are needed to ensure that it never poses any health hazard. I also would like to see firm data on how many acres of wetlands would be damaged by the L-reactor's cooling water, and exactly what project alternatives are available to reduce that damage.

And the possible consequences of a release of radioactive gases need close attention. Given the potential effects, we should have a full public review of the L-reactor's design and impacts.

Second, the environmental assessment issued by DOE in August clearly is not the full discussion we need. Parts of it are very cursory. For instance, the discussion of radioactive gases offers few details about whether an accidential release would threaten major population centers. Moreover, the independent Patterson report argues that the conclusions in the EA's summary are not supported by the assessment's own data. I understand that officials at the Savannah River Plant are very critical of the Patterson report. The public is understandably confused by the debate. To my mind, this makes a full, documented, and public environmental study all the more necessary.

Moreover, given these circumstances, it is appropriate and reasonable that all government information which has a material bearing on the issue of whether an EIS is required should be made part of this hearing record. I understand that comments on the EA have been submitted to the Department of Energy by Region IV of the Interior Department's Fish and Wildlife Service. Attached to this statement is a copy of my letter to the Energy Department requesting a copy of these comments, and I respectfully request that this letter be included in today's hearing record. I would also ask, Mr. Chairman, that the Energy Department be requested to provide a copy of these comments for the record. In addition, I have requested Region IV of the Environmental Protection Agency to provide me with copies of the extensive staff technical reports it developed on the L-reactor issue in preparation for this hearing. A copy of that letter is attached to this statement, and I ask that it too be entered into today's hearing record.

There is also a third reason why DOE's credibility is at stake and why the Department should therefore move quickly to start an EIS. This is the issue of process. South Carolina's continued support for defense nuclear programs is based on the Department's willingness to be a "good neighbor" -- to keep the State fully informed about SRP operations, to deal with State questions in a forthright and responsive way, and to take steps to protect public safety and the environment. DOE's refusal to follow the standard EIS procedure in this case has added to South Carolina's concerns and has hurt the Department politically. As I said in my December letter, further refusal to do the EIS will only hurt DOE's position further.

Mr. Chairman, events since I wrote my letter to Mr. Hodel only confirm the need for a full EIS. Earlier this month, as you know, Governor Riley called for an EIS on the L-reactor and announced that the State of South Carolina is joining the private lawsuit against the Department. DOE's stubbornness on this issue now threatens to polarize the situation even further. Moreover, this situation is now of more than just local concern. A protracted legal and political fight will only delay this major defense project more.

I hope, therefore, that the Department of Energy will now reverse its position on the L-reactor EIS. I also hope that DOE will not seek a Congressional exemption to NEPA's requirements. The Department needs to realize that it should be a good neighbor, and that its reluctance to follow standard procedures and to address public concerns fully only generates opposition and delay.

ERNEST F. HOLLINGS
SOUTH CAROLINA

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THE JUDICIARY: RANKING DEMOCRAT
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COMMUNICATIONS: RANKING DEMOCRAT
SURFACE TRANSPORTATION
SCIENCE, TECHNOLOGY, AND SPACE
DEMOCRATIC POLICY COMMITTEE
OFFICE OF TECHNOLOGY ASSESSMENT
NATIONAL OCEAN POLICY STUDY

Feburary 4, 1983

The Honorable Donald P. Hodel
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Mr. Secretary:

I understand that comments have been submitted to the Department of Energy by Region IV of the Fish and Wildlife Service, Department of Interior, discussing the adequacy of the Department's Environmental Assessment on the proposed operation of L Reactor at the Savannah River Plant in South Carolina. I am hereby requesting a copy of these comments from your Department. In addition, I am requesting in my statement for the Feburary 9th hearing on this matter that a copy of these comments be provided by the Department of Energy for the hearing record.

I appreciate your assistance in this matter and look forward to your prompt response.

Sincerely,

Fritz Hollings

Ernest F. Hollings

EFH:pw

ERNEST F. HOLLINGS
SOUTH CAROLINA

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COMMUNICATIONS: RANKING DEMOCRAT
SURFACE TRANSPORTATION
SCIENCE, TECHNOLOGY, AND SPACE
DEMOCRATIC POLICY COMMITTEE
OFFICE OF TECHNOLOGY ASSESSMENT
NATIONAL OCEAN POLICY STUDY

Feburary 4, 1983

The Honorable Charles R. Jetter
Regional Administrator
Environmental Protection Agency - Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Charlie:

As you know, questions have been raised regarding the adequacy of the Environmental Assessment prepared by the Department of Energy on the proposed operation of L Reactor at the Savannah River Plant in South Carolina.

Region IV was responsible for preparing extensive technical materials on this issue in preparation for the Senate Armed Services Committee hearing scheduled for Feburary 9, 1983, in North Augusta, South Carolina.

I do hereby request copies of all draft technical materials from each division and each branch in your regional office which were developed in preparation for this hearing.

I appreciate your assistance in this matter and look forward to your prompt response.

Sincerely,

Fritz

Ernest F. Hollings

EFH:pw

SENATOR SAM NUNN
FEBRUARY 9, 1983

Enclosure No. 11

STATEMENT ON THE SAVANNAH RIVER PLANT L-REACTOR REACTIVATION

I regret that due to longstanding prior commitments I could not adjust my schedule to personally attend this important hearing on the proposal to restart the Savannah River Plant L-Reactor. The effects of the L-Reactor's operation are a matter of considerable concern to me and to the citizens of Georgia as well as our friends in South Carolina. I support the efforts of the Senate Armed Services Committee, of which I am a member, to examine in detail the consequences of this proposal. I believe there should be a thorough and comprehensive examination of the environmental and health aspects prior to any final decision. I especially commend my colleague, Senator Thurmond, for his leadership on this issue and his willingness to conduct this field hearing.

The proposal to restart the L-Reactor is an attempt to meet certain specific defense requirements of this nation. The citizens of Georgia and South Carolina, who have contributed so much to U.S. defense efforts throughout our history, have always recognized what is involved in maintaining a sound defense posture.

At the same time, however, this defense posture must be built on a firm foundation of public support and understanding. The Georgia and South Carolina communities which are affected have a right to know about the L-Reactor's impact on their areas and to be involved in the decision-making process. The communities surrounding the Savannah River Plant and along the Savannah River have raised legitimate questions regarding the environmental consequences and health effects resulting from the reactor's discharge.

Today's hearing is a needed first step in addressing these questions. I have every confidence that the citizens of Georgia and South Carolina and state, local, and federal officials will approach this decision with careful thought and cooperation. There is ample precedent that our national security requirements and our environmental concerns can be met simultaneously without adversely affecting either. The Navy's establishment of the strategic submarine base in King's Bay, Georgia is an example with which I was personally involved. The Navy worked closely with environmental concerns to mitigate the base's impact on the area.

I will be following the L-Reactor proposal attentively at all stages with a goal toward meeting our legitimate national security requirements while ensuring appropriate environmental and health safeguards.

##

Enclosure No. 12

THOMAS F. HARTNETT
1st District, South Carolina

COMMITTEE:
ARMED SERVICES

SUBCOMMITTEE ON MILITARY
PERSONNEL AND COMPENSATION

SUBCOMMITTEE ON SEAPOWER AND
STRATEGIC AND CRITICAL
MATERIALS

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February 9, 1983

MR. CHAIRMAN, DISTINGUISHED PANEL MEMBERS, LADIES & GENTLEMEN:

I am Robert O. Lighthart, Jr., Special Assistant to Congressman Thomas F. Hartnett of the First District of South Carolina.

Congressman Hartnett regrets that he is unable to join us here today. He could not break a prior commitment in Washington, D.C.

The Congressman has a genuine interest in the matter we meet here today to discuss. His interest caused him to write to the head of the U.S. Environmental Protection Agency on December 9, 1982. He has asked that I read into the record of these proceedings, the answering letter from Mrs. Anne M. Gorsuch, E.P.A. Administrator.

With your permission, Mr. Chairman, her letter reads as follows:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 28 1983

THE ADMINISTRATOR

JAN 31 1983

Honorable Thomas F. Hartnett
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Hartnett:

Thank you for your letter of December 9, 1982, on the reactivation of the L-Reactor at the Savannah River Plant, Aiken, South Carolina. As requested, we have reviewed the Department of Energy's (DOE) action with particular attention to possible drinking water problems.

First, to reply to your request for EPA's views on the environmental consequences of the restart of the L-Reactor, I would like to discuss each of six areas of environmental impact individually. The first is the impact of routine radioactive releases on the water in the plant area. Since there are three reactors similar in design to the L-Reactor now in operation in this area, it is very unlikely that the restart of a fourth reactor would substantially increase adverse environmental impacts resulting from increased radioactive releases. The routine discharges of tritium to the river have been and will continue to be monitored. Based on monitoring data and other information supplied through DOE, the amount of radioactive tritium in the water supplies will increase over present levels. The resulting level, it is estimated, will amount to an average of 2,500 or 3,000 picocuries per liter, far below EPA's drinking water standard of 20,000 picocuries per liter. EPA's knowledge of other reactors also indicates that there is no significant environmental hazard from routine radiological releases.

The resuspension of sediments containing some radioactive materials is a second, related question. Some sediment with radioactive cesium will be resuspended and released into the Savannah River. EPA agrees with the Department of Energy's view that cesium will remain chemically bound in the stream or river sediments. Contaminated sediment could move down river through a repeated process of deposition and resuspension. However, the monitoring data suggests that this process is not likely to result in the presence of detectable radioactive cesium in the water supplies of Beaufort-Jasper or Port Wentworth. Most of the cesium would be deposited in the swamp adjacent to the Savannah River Plant. EPA believes there will be no significant environmental hazard from this release.

A third environmental impact discussed in DOE's assessment is the withdrawal of water from the river for reactor cooling. Currently, the Savannah River Plant uses about 456 million gallons of water per day. This withdrawal represents about 7% of the average Savannah River flow. With the restarting of the L-Reactor, an additional 251 million gallons per day of cooling water will be needed. This will result in a total withdrawal of approximately 13% of the River's average flow. These water withdrawals would involve some impingement, or entrainment, of fish, fish eggs, larvae, and other aquatic organisms. We do not believe the impingement, or entrainment, would be significant.

Fourth, the liquid discharges from the L-Reactor to Steel Creek and the river are subject to a permit issued under the NPDES program which has been delegated to South Carolina by EPA. This permit process can establish operating conditions such as requiring sufficient precautions to protect the environment. Since negotiations between the State and DOE concerning this permit and its conditions are underway, I do not feel it is appropriate for EPA as the delegating Agency to publicly comment on this issue, at this time.

Fifth, one of the possible environmental impacts of the proposed thermal discharges will be the impact on certain wetlands in the area. The assessment indicates that the amount of wetlands affected in some degree will approximate a thousand acres (580 acres along Steel Creek and 420 acres along the swamps bordering the river). These wetlands are still impacted as a result of prior operation of the L-Reactor from 1954 to 1968, but there has been some return to earlier conditions since the L-Reactor was placed in a "stand-by" status. If no steps are taken to minimize the impacts of these thermal discharges, hot water would eliminate or impair wildlife and vegetative forms which have started to reappear in this area during the "stand-by" period. The hot water would return the area to its pre-1968 condition.

An additional impact discussed in the Environmental Assessment is the L-Reactor's impact on groundwater underlying the site. According to the Assessment the L-Reactor will discharge wastewater into a presently dry, nearby seepage basin. Supporting facilities would also discharge wastewater into seepage basins. The plant has an extensive groundwater monitoring network and all seepage basins are closely monitored. The plant staff is preparing a comprehensive hydrogeological report to identify existing groundwater problems and propose remedial actions. From this we see that groundwater contamination impacts are being carefully evaluated and appropriate mitigative measures are in the planning stages.

We are also aware of programs of the State of South Carolina and the State of Georgia that concern the Savannah River Plant. The South Carolina Department of Health and Environmental Control (SCDHEC) and the Georgia Department of Natural Resources (GADNR) monitor both the air and water in the surrounding area as well as downstream of the facility. The river is monitored once a month as part of a state-wide surveillance program. The analytical methods used detect radiological contaminants and the associated concentrations. South Carolina plans to monitor the river more frequently once the L-Reactor goes on-line to determine the additional radiological impacts associated with its operation. The results of these monitoring programs are published annually in enviromental surveillance reports that can be obtained upon request. In addition to the radiological surveillance programs, the States also have primary authority for their drinking water supplies in accordance with EPA regulations.

As to your procedural inquiry, the Department of Energy's Environmental Assessment on the restart of the L-Reactor is a comprehensive document which sets forth a detailed discussion of the expected environmental effects of the proposed project, including a comparison of the anticipated impacts of the post-1984 operation with the environmental impacts of the pre-1968 operation, and indicates no net increase in environmental effects between the two. The Environmental Assessment provides a sufficient basis for the Department of Energy's decision that it was not necessary to prepare an Environmental Impact Statement, particularly in light of the fact that this is a restart operation. Therefore, the Environmental Protection Agency does not question the Department's conclusion that its procedures comply with the pertinent statutory provisions of the National Environmental Policy Act,and with regulations issued pursuant to the Act.

I can assure you that we have followed this project very closely from the time the DOE assessment was issued in August 1982. Charles Jeter, our Regional Administrator in Atlanta, Paul Cahill, the Director of EPA's Office of Federal Activities, and Glen Sjoblom, the Director of EPA's Office of Radiation Programs, are maintaining surveillance of this project for EPA. Mr. Jeter has also met with State and DOE officials to discuss this project. I appreciate the opportunity to express EPA's views and I hope I have responded satisfactorily to your questions. If EPA can assist you further in this matter, please let me know.

Sincerely yours,

Anne M. Gorsuch

cc: A. Alan Hill, Chairman
Council on Environmental Quality

Enclosure No. 13

STATEMENT OF CONGRESSMAN LINDSAY THOMAS

Before the Senate Armed Services Committee Hearing

N. Augusta, S.C., February 9, 1983

Mr. Chairman, I am Lindsay Thomas, and I have the privilege of representing the First Congressional District of Georgia in the Congress.

I very much appreciate your courtesy in allowing me to submit this statement on the environmental consequences of the restart of the L-Reactor at the Savannah River Plant. I am especially grateful for the leadership and concern which you have shown in calling this hearing to explore the issues involved in the proposed action by the Department of Energy.

On behalf of the people of the First District, I would also like to express my appreciation to our two Georgia Senators, the Honorable Sam Nunn and the Honorable Mack Mattingly, for their careful attention to this matter. I know that their judgement and assistance will be vital in assessing the alternatives which will be presented today.

Mr. Chairman, my personal interest in this matter is based on the fact that the First District of Georgia lies directly adjacent to the western boundary of the Savannah River Plant. The northeastern boundary of my District is the Savannah River beginning on the north at Burke County just below Augusta, and extending south to the Georgia coast at the City of Savannah.

The SRP is an important employer both in and around my District, and the Savannah River and the Tuscaloosa and other acquifers beneath the plant provide essential water supplies for all of the 20 counties I represent.

Let me state at the outset that the work of the SRP is essential to national defense. It is a central part of the system of deterrence which shields our nation from the threat of nuclear holocaust. I support full funding to provide the SRP with the resources it needs to meet its mission requirements.

I also support taking all steps necessary to protect the health and safety of our citizens. Under no circumstances should the SRP be assigned a defense mission which runs the risk of contamination of our air or water by nuclear waste or nuclear accident.

The responsibility to show that the L-Reactor presents no danger to public health falls to the Department of Energy. The Department should be required to prove to the affected state governments that the L-Reactor- is safe, and the states should apply the same reasonable standards of evaluation of the Department's proposal as they would apply to any applicant.

Accordingly, I support an Environmental Impact Statement or equivalent review if the State of Georgia determines that such action is necessary to demonstrate that the L-Reactor presents no danger to Georgia citizens.

In addition, though this point does not relate directly to the L-Reactor or SRP, I would like to express my absolute opposition to the bedrock storage of nuclear waste in the Savannah River area. The area is geologically unsuited for such use, and any such activity presents a clear danger to our vital underground water supplies.

Finally, Mr. Chairman, I would like to raise an additional point which I believe is of more general significance to our area than the restart of the L-Reactor.

In studying this issue, it has become apparent to me that there is a vital need to prepare a long-range plan for nuclear facilities within the Savannah River Basin. The plan should be developed and enforced under a joint federal-state system of administrative review. If such a system existed today, we would most likely not be faced with the controversy which now confronts us.

The Savannah River Basin includes the Chem-Nuclear, Inc., Radioactive Waste Disposal Facility in Barnwell County, South Carolina; the Allied General Nuclear Services-Barnwell Fuel Plant, and commercial nuclear power facilities. The area is the repository for some one-third of the defense high-level nuclear waste in the nation.

Despite this concentration of nuclear-related facilities in a relatively small area, neither the states nor the federal government has a comprehensive system of evaluating the cumulative impact of expansions and new activities at the installations.

I propose that a Federal-State Task Force on the Savannah River Basin be established to include the Nuclear Regulatory Commission, the Department of Energy, the Environmental Protection Agency, and the States of Georgia and South Carolina. The task force could be created and its authority defined either by law or executive order of the President.

It would be the responsibility of the task force to evaluate the long term plans for all nuclear facilities in the area and to determine if those plans are compatible with the health and safety of our citizens. The task force would give the Department of Energy increased credibility with its critics. This credibility would come because the Department would be participating in an ongoing exchange of information about its safety operations, and it would receive the benefit of systematic outside assessments of its plans.

It would provide an effective mechanism to improve communications between the states and the federal government on nuclear activities, and yet fully protect national security information.

Most important, this task force would end the piecemeal approach of addressing nuclear development in our area. It would ensure that the jobs associated with our nuclear industries would be protected, it would ensure that vital defense missions would be given priority, and it would give the public renewed confidence in the determination of our government to protect the health and safety of our citizens.

Thank you again for the opportunity to present this statement. I look forward to continuing to cooperate with the committee in its work involving the SRP.

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Enclosure No. 14

STATEMENT OF CONGRESSMAN DOUG BARNARD, JR.

Savannah River Plant Hearings
February 9, 1983

(delivered by Mr. Ted Hammock, Administrative Assistant to the Congressman)

Mr. Chairman, as you know, Congressman Barnard represents the 10th Congressional District of Georgia, which is directly across the river from the Savannah River Plant. As the Congressman from that district, he commends you for your interest in the plant and for your inquiry into its impact on the economy and the environment of this area.

There has been considerable publicity related to the restart of the L-reactor. While Congressman Barnard can appreciate the concern of the State of South Carolina with the L-reactor, he is assured that the re-start of the L-reactor--in and of itself--does not constitute a significant impact on the environment.

Much information has been gathered on Savannah River Plant. DuPont has done a model job of keeping records, the University of Georgia operates an ecology lab, and the Department of Energy has done four Environmental Impact Statements and three Environment Assessments on various aspects of SRP.

Congressman Barnard is of the opinion that the Department of Energy and DuPont are now using the most current technological advances to insure against radioactive waste seepage.

He urges that this be a continued commitment, and that no effort be spared in guaranteeing that radioactive waste will be stored only under the most stringent safety conditions.

He strongly urges the Department of Energy and the Nuclear Regulatory Commission to be diligent in reviewing the total, cumulative impact of all developments, including the Savannah River Plant. The long range development of the basin, both civilian and military, must be carefully monitored to insure that any cumulative effect is virtually immeasurable.

The Savannah River Basin is more than a location for SRP. It is a vital regional resource. We owe it to the citizens to insure safety and to help them express and have answered their concerns.

The technical points could be debated for years. But the most important question is whether an adequate process exists to assure that all information has been gathered, public health and safety has been protected, and public concerns have been addressed.

Those who are accountable for such questions have thus far shown an openness and a willingness to respond to the legitimate concerns of the public.

Mr. Chairman, Congressman Barnard is keeping an open mind, and we look forward to the testimony which will be presented now.

Enclosure No. 15

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Executive Director
JACQUELINE E. JACOBS, Ph.D.

Statement
Senate Armed Services Committee
L-Reactor, Savannah River Plant, Hearing
February 9, 1983

I am Betty Spence, Executive Director designee of the South Carolina Wildlife Federation. I represent the Federation's Board of Directors, and, through the Board, the membership. The Federation is a nonprofit conservation organization with some 6,000 members consisting of individuals from all walks of life and groups including business and industry. We are the state affiliate of the National Wildlife Federation. Our objective is to promote the wise use of natural resources. We appreciate the opportunity to comment today.

We have reviewed the August, 1982 Environmental Assessment concerning the significence of effects on the human and natural environment of the proposed resumption of the L-reactor operation. The Assessment makes it quite clear that a major factor of the proposed action is speed. The Federation does not wish to delay unduly any action necessary for national defense, nor are we expressing opposition to the start-up. We do have questions concerning water quality, application of laws, degradation of wetlands, public health and possible alternative methods of cooling waters. We believe the public interest would be best served and public confidence best ensured if all state and federal environmental laws were followed, if the process were subject to greater public review, and if alternatives were examined with a more positive attitude.

Resumption of the L-reactor operation must be viewed as a new activity. Present day technology and proposed modifications to the reactor necessitate this. The entire spectrum of environmental laws passed since the reactor was shut down in 1968 calls for this. The comparison baseline for impacts should not be the situation which existed during former operation. The intensity of impacts should be measured by comparing the natural, healthy ecosystem, without the operation, to the anticipated ecosystem once the reactor is operational. We believe these impacts are significant and need careful scrutiny.

The Federation strongly believes that the state's water quality laws and regulations, particularly those related to the National Pollution Discharge Elimination System (NPDES) should apply. We have endorsed recent recommendations of the Governor's Water Law Review Committee that stress (among several points) that water "be held subject to a public trust to the ends that under the police and public trust powers of the state that. . .the conservation and management of waters within the state be effectuated without degradation of the resource or risk to health, safety or environment now and in the future." (Report and Recommendations, Governor's State Water Law Review Committee, December 31, 1982, p. 4) We endorse the right of South Carolina to protect the waters of the State including surface and groundwater on the Savannah River Plant (SRP).

We realize that the President may exempt SRP from state jurisdiction on a yearly basis if he determines it to be in paramount national interest. We sincerely hope this will not be done and that the President will recognize the importance of state and federal governments working together on a cooperative, open basis to assure the public health and safety and the environmental quality of the area.

The proposed thermal discharge violates South Carolina's Water Classification Standards which says our waters shall "be free from high temperature. . .which interfere[s] with water uses, or which [is] harmful to human, animal, plant or aquatic life. (Water Classification Standards System, SCDHEC, 1981, p. 4) The U.S. Water Pollution Control Act recognizes that effluent limitations for thermal discharges are to "assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on that body of water." (Federal

Water Pollution Control Act, As Amended, 33 USC 466 et seq, Sect. 316) The Assessment states that the effluent will eliminate most of the biota of the main channel from the L-reactor outfall downstream to the delta. For purposes of NPDES, the L-reactor and all other discharges under review on SRP lands must be viewed as point source discharges at the point of discharge origin.

Since Steel Creek, its delta area, and the swamp are within the confines of a federal area and are neither used by nor accessible to the general public, since they are not major streams, but represent only a small portion of SRP and state waters, some argue that it would be appropriate to designate the highest use of these waters for cooling purposes. They also argue that the action will not destroy all wildlife habitat in the area, only modify the area for a different type of usage by both man and wildlife. They also argue that the changes would provide an opportunity for further study and data collection. While these are worthwhile considerations, a decision to endorse them should not be made in haste.

There is a question whether continued use of the creek and swamp as a cooling stream will be successful over time. An October, 1981, SRP Ecology Lab Report notes speculation that increased defoliation in the swamp due to thermal effluent may jeopardize the area's capability to cool waters to levels that meet required standards at the Savannah River. (An Evaluation of the Steel Creek Ecosystem in Relation to the Proposed Restart of the L-Ractor, II-12).

More importantly, designation of Steel Creek and the swamp for the purpose of cooling would set an unfortunate precedent under current law. The real question is one of values and of principles. We believe there is an intrinsic value in the natural integrity of a body of water, and in the life the water supports. We believe there is a large responsibility on the part of a technologically bold society to be stewards of the natural system and to recognize that incremental destruction of these systems, bit by bit, does contribute to the degradation of the whole. Let me be clear that we do not advocate not using our natural resources. To the contrary, we promote their wise use. We question if designation of these waters for cooling is the wisest use or if there are not reasonable alternatives which will avoid potential damage.

The question of public health and safety is an important one and is of concern to the Federation. The resuspension of radiocesium has raised questions by the general public which the federal government must address fully and adequately. The safety of the Savannah River as a source of public water supply must be protected, and public confidence in such protection must be assured. The present assessment does not do this.

Perhaps less obvious, but no less important is the influence of SRP operations on groundwater. The Assessment does not give sufficient information on the potential hazards to groundwater, particularly from seepage basins. Even though it acknowledges that "potential contamination of the water table aquifer and neighboring surface water systems from the operation of the L-reactor will result from the migration of contaminants from the seepage basin," it dismisses the danger by saying the contaminants move horizontally. SRP is experiencing problems with groundwater quality at this time. Since groundwater contamination has ramifications far beyond the boundaries of SRP in terms of space and time, it is extremely important that resource protection is well documented and implemented. This is not the current situation.

In summary, the Federation supports the application of current law and standards to the proposed action. We support open review of the action and public participation in the decision-making process.

Thank you.

Betty Spence

Enclosure No. 16

February 9, 1983

To: Members of the Senate Armed Services Committee, meeting in North Augusta, SC.

From: Georgia Chapter of the Sierra Club

Re: Request to be represented at the L-reactor hearing in association with the South Carolina Chapter of the Sierra Club.

The Georgia Chapter of the Sierra Club, with 3,300 members throughout the state, asks that this committee permit Dr. Judith E. Gordon to present testimony on behalf of the Georgia Chapter as well as the South Carolina Chapter of the Sierra Club. Thank you.

Ronald Mayhew, Chair, Georgia Chapter of the Sierra Club.

SIERRA CLUB South Carolina Chapter
. . . To explore, enjoy and preserve the nation's forests, waters, wildlife and wilderness . . .

February 1, 1983

TO: Jim Smith, c/o Strom Thurmond, Senate Armed Services Committee Hearing: L-reactor.

From: Judith E. Gordon, PhD, South Carolina Chapter, Sierra Club.

Re: Written testimony on restart of the L-reactor, as requested.

There are many salient points concerning the safety and environmental hazards associated with restart of the L-reactor; these include its age, lack of a containment dome, and the movement of radioactive cesium into the Savannah River. Many of these points will have been discussed by the various groups represented at this hearing. The South Carolina Chapter of the Sierra Club would like to focus on two considerations, one involving the impact of L-reactor restart on the wetlands associated with the Steel Creek area, and the other concerning the attitude prevalent in surrounding communities in South Carolina, namely that to oppose the restart of the reactor is the next thing to being anti-American.

Some of the data used in the EA are derived from two reports on the Steel Creek ecosystem done by the Savannah River Ecology Lab (SREL-9, UC-66e; SREL-11, UC-66e). These data cover Summer 1981 to early Spring, 1982. After reading these reports, it is my judgement that the EA does not always adequately reflect their contents:

1. With respect to restart of the L-reactor, the report summarizes: "The Steel Creek stream corridor and flood plains must be considered to be a sacrifice zone for virtually all higher life forms". The EA does not include this statement and, in fact, is written in such a way as to make the environmental effects seem far less drastic.
2. The SREL reports further state that additional studies are needed to determine the effect of wetlands degradation on migratory fish species.
3. The SREL reports state that spring studies are needed to determine just how important the wetlands area might be to Savannah River productivity. It has already been established that Upper Three Runs (similar area nearby) is very important to fish productivity in the Savannah River.
4. In the EA (p. 3-47) the average bioaccumulation factor for radiation in 20 species of fish from Steel Creek is 2,019, citing SREL-11. However SREL-11 itself emphasizes an average bioaccumulation factor of 3,000, cautioning that for larger game fish like large-mouth bass, the bioaccumulation factor reaches 6,000. This is not mentioned in the EA. Obviously the public would not be fishing in Steel Creek, but

these data may have relevance for estimating bioaccumulation in the Savannah River.

5. In SREL-11, II-6,7, the report indicates that the Steel Creek wetlands area might possibly be important habitat for the wood stork, a bird species threatened in South Carolina and under "status review" by the United States Fish and Wildlife Service. Loss of suitable habitat (see attached article) is the most dangerous threat to the wood stork. Since this area provides suitable habitat at a time when other suitable areas are declining, and since wood storks have been observed in the area, it appears that the Steel Creek wetlands should be conserved. In the EA (p. 5-9) it is merely noted that "no critical habitat as designated by the U. S. Fish and Wildlife Service is on the SRP". An EIS might clarify this situation.

EMPLOYMENT ASPECTS

Resolutions and statements passed by local (Aiken County, SC) government bodies and local organizations claim there is overwhelming support for the restart of the L-reactor. Such statements should be viewed in light of the current economic situation. For example

1. Of those who unanimously passed the North Augusta City Council endorsement, only two do not work at SRP. (See attached.)
2. People who live in this area suffer a kind of nuclear blackmail, i. e., since SRP brings jobs into the area, no one should ask critical questions; it's un-American! Never mind if there are unanswered questions about health and safety.
3. If this job logic is followed to its obvious conclusion, a defense facility could never be terminated because people would lose jobs.
4. Should the Reagen Administration be successful in negotiating a nuclear arms freeze or weapons reductions, some nuclear facilities would have to be phased out. What sort of contingency plans have been developed by DOE for such a situation? Are there programs for retraining and relocating personnel? Or do we go on making bombs because otherwise someone will lose a job?

Some of the L-reactor problems would be lessened by the installation of devices such as cooling towers as outlined in Appendix B of the EA. DOE has chosen to reject such alternatives because they will be too costly and/or take too long to implement. Again, economics become more important than safety and ecological considerations. Actually, a certain wry twist can be put on the job fixation of local officials by pointing out that safety devices such as cooling towers and containment domes would provide for even more jobs.

Sierra Club
page 3

This very committee (Armed Services) in 1981 expressed some doubts as to the ability of the aging reactors at SRP to operate safely and efficiently in the coming years. The General Accounting Office has criticized DOE for taking insufficient action to assure that older reactors are meeting current safety standards (see GAO "Better Oversight Needed for Safety and Health Activities at DOE's Nuclear Facilities"; 81-108, Aug. 4, 1981).

There is clearly sufficient evidence supporting the need for an EIS. Citizens on both sides of the Savannah River are entitled to nothing less. If DOE hopes to restore some measure of public confidence in its actions, then a properly conducted preparation of an EIS should be forth coming. It is hoped that this Committee will support such action.

Two enclosures.

Judith E. Gordon, PhD
South Carolina Chapter, Sierra Club

Judith E. Gordon

Special City Council Meet Endorses L-Reactor Startup

Jan 27, '83 By SAM WOODRING, Editor The Star, N. Augusta, SC

At a special meeting of the North Augusta City Council Monday, Mayor D. Kim Ledford cited the provisions of the city code which permitted him to call such meetings when "the public business required it," and introduced a resolution designed, apparently, to encourage no delay in the restart of the L-Reactor at the nearby Savannah River Plant.

North Augusta City Council thus parroted the actions of numerous other governmental and commercial groups in recent days in enacting very similar resolutions, all designed to be added to the records of a public hearing to be held February 9 at noon at North Augusta High School on the subject. The public meet will be chaired by U.S. Senator Strom Thurmond.

Prior to its passage, the resolution earned plaudits from city councilman Dan Layman who said he was happy to be part of such an action contributing to the security of the nation. Ledford's motion for adoption was seconded by councilman Bill Gray and unanimously passed by the group.

Mayor Ledford and Councilman Layman were the only members of council whose livelihood is not earned directly at the Savannah River Plant. Councilman Jim Harris was absent from the meeting which was attended by four city employees, seven members of the media and four citizens who made up a special council committee. This portion of the evening's activities lasted for six minutes, after which council embarked on a one hour, 42 minute "work" session.

Augusta, GA

L-Reactor:

SRP Officials Warn Restart Lawsuit Could Cause Canceliation of Some Defense Projects

Augusta Herald 2-7-83

From Herald Staff and Wire Reports

AIKEN — Officials at the Savannah River Plant warn the state's lawsuit over the restart of the L-reactor could cause some defense projects at the plant to be canceled.

The Department of Energy has reviewed effects of the reactor, but Gov. Dick Riley and Attorney General Travis Medlock said not enough has been done.

They have joined a lawsuit by environmentalists in Washington, D.C., calling for a more complete review of the project.

The lawsuit apparently marks a turning point in the long history of friendly relations between SRP and the state.

"South Carolina appears to be headed down the track of telling politicians in Washington that defense installations are not welcome," said Richard P. Denise, deputy manager of the plant for the Department of Energy.

SRP officials say prospects for expanding the plant have been jeopardized by the lawsuit which seeks an environmental impact statement on the L-reactor restart.

"We're already seeing the impact," said Denise.

"We think the state may have caused this plant to lose a facility worth a half a billion dollars and over 100 jobs," he said.

He said the plant may have lost a laser-isotope facility that would turn 17 tons of impure plutonium into weapons-grade material.

Denise said Sen. James McClure, R-Idaho, is interested in having that plant in his state.

He said other projects, including a high-level nuclear waste gasification process now in the design phase, "could also be in jeopardy" of being located in more receptive locations.

As designed, the reactor will use a continuous flow of Savannah River water and release millions of gallons of hot water per day into Steel Creek, an area contaminated with radioactive cesium during the 1950s and 1960s.

SRP officials said the amount of diluted cesium that will be flushed into the river will be well within Environmental Protection Agency standards.

A closed cooling system would cost $40 million and is opposed by environmental groups, Denise said.

Gov. Riley said an environmental impact statement would "restore public confidence," but Denise said, "I don't think we've lost it. We've studied this thing to death."

Proceedings of the Nongame and Endangered Wildlife Symposium

The Wood Stork

August 13-14
1981
Athens, Georgia

Georgia Department of Natural Resources
Game and Fish Division
echnical Bulletin WL 5

dited By
on R. Odom & J.W. Guthrie

The Recent Status of the Wood Stork in Florida and Georgia

John C. Ogden
Condor Research Center
National Audubon Society
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Ventura, CA 93001
and
Barbara W. Patty
Research Department
National Audubon Society
115 Indian Mound Trail
Tavernier, FL 33070

Abstract

The Wood Stork (*Mycteria americana*) has declined from a population estimated at 20,000 breeding pairs during the early 1930's to approximately 4,800 breeding pairs in 1980. A decline in food resources and, on a more regional basis, a loss of suitable nesting sites are thought to be the major factors responsible for the species' decline. Although the Wood Stork has been listed as "endangered" by the State of Florida, and has been intensively studied since the early 1970's, little action has been taken by governmental or private agencies to directly aid the Wood Stork.

Introduction

The population of Wood Storks (*Mycteria americana*) that breeds in the United States apparently is on a pathway that will lead it seriously close to extinction by the end of the Twentieth Century. Historically, Wood Storks apparently bred in all coastal states between Texas and South Carolina, although the largest nesting colonies and greatest numbers of birds always occurred in Florida (Bent 1926, Cone and Hall 1970, Dusi and Dusi 1968, Howell 1932, Oberholser 1938, Oberholser and Kincaid 1974, Wayne 1910). By the early 1980's, however, the U.S. population of storks was entering its fifth consecutive decade of continuous decline, and the breeding range was reduced to Florida and adjacent southeastern Georgia. In addition, a few pairs nested successfully in coastal South Carolina in 1981 (fide, T. Murphy).

Studies and censuses of storks since the early 1970's, conducted by biologists of the National Audubon Society, the U.S. National Park Service, the Florida Game and Fresh Water Fish Commission, the Florida Audubon Society, the Georgia Department of Natural Resources, and the U.S. Geological Survey, have documented the rate and immediate causes for the decline (Kushlan, et al 1975, Ogden and Nesbitt 1979). These studies have revealed no indication that this decline has recently abated, or that the future offers much hope of any improvement in the stork's status. In this paper we summarize what is known about the decline of the Wood Stork in the U.S. during the Twentieth Century, provide an updated report of the censuses of the breeding population, and review the actions taken thus far to aid this failing population. We thank Jacquie Broz of the National Audubon Society for assistance in the preparation of the paper.

Historical Review

1900 to the early 1930's. Wood Storks were not seriously disturbed by plume-hunters and market hunters during the late Nineteenth and early Twentieth Centuries, at a time when egrets and other commercially valuable species of colonial wading birds were hunted almost out of existance (Bent 1926, Robertson and Kushlan 1974, Ogden 1978). For example, Oscar Baynard and F.M. Phelps (in Bent 1926) independently visited a single large stork nesting colony in the Big Cypress Swamp of southwestern Florida, in 1912 and 1914 respectively, and estimated that it contained between 5,000 and 8,000 active stork nests. A greatly exaggerated report of 50,000 nesting storks in one southern Florida mangrove colony in 1933 was initially accepted to be true (Holt 1933), presumably because storks were so generally common during that time. This report, among others, led Robert P. Allen (Palmer 1962) to estimate that 150,000 storks were in the U.S. breeding population during the early 1930's.

The task of determining the actual number of storks in the U.S. population as recently as the 1930's is perhaps an impossible undertaking due to the absence of any regional censuses or even consistent coverage of single colonies, and to the inaccuracies of some reports that did get into print. For example, other people who visited the colony that supposedly contained 50,000 storks in 1933 reported only about 6,000 storks were there in 1934 and 1938 (Ogden 1978). If there were 50,000 in 1933, they disappeared by the next year and were never reported again in any colony or region.

The senior author of this paper has recently reviewed all historical reports of storks in colonies during the late 1920's and early 1930's, including much information in the unpublished reports of early Audubon wardens in Florida. From this analysis we have concluded that there may have been about 60,000 total storks in the U.S.

population at about 1930. Included in the 60,000 were 10,000 breeding adults in the southwestern Florida mangrove colonies (now Everglades National Park), 20,000 breeding adults in the Big Cypress colonies of Florida, and roughly 10,000 breeding adults in 20 or 30 small colonies located in central and northern Florida and scattered through other parts of the southeastern coastal plain. The remaining 20,000 storks were non-breeding immatures.

The Mid-Twentieth Century. Although concern over the adverse influence that human activities had on wetland ecosystems in Florida was expressed as far back as the late 1930's (J. O'Reilly, in litt.; unpublished Audubon warden reports, Tavernier, FL), it was not until the mid-1950's that a series of drought-induced nesting failures resulted in serious attention towards Wood Storks. Between 1957 and 1960, several biologists, including Robert P. Allen, M. Phillip Kahl, and Alexander Sprunt, IV, actively censused and studied Wood Storks in an effort to determine the bird's status and to acquire the first detailed information on its nesting biology and feeding habits (Kahl 1964, Sprunt and Kahl 1960). Censuses in 1959 and 1960 revealed an unexpectedly high count of 10,060 nesting pairs of storks, and that good rates of reproduction were re-occurring in the major colonies. Thus, it was concluded that the situation was not critical, and that the potential for recovery did exist. Although the total breeding population had declined by approximately 50 percent between 1930 and 1960, the persistent nature of the stork's problems apparently were not fully recognized at that time.

The Recent Status. It soon became evident that the stork's problems were continuing, when nesting efforts in the well-protected Everglades National Park colonies during the early 1960's often resulted in failure to produce substantial numbers of young. As a result, systematic censusing of Everglades Park stork colonies was begun in 1965, under the direction of William B. Robertson, Jr. An outgrowth of these censuses was an intensive study to determine the causes for the increasingly frequent nesting failures. This study was initiated in the Park in 1973, and expanded to other regions of Florida by the National Audubon Society Research Department in 1974. The expanded research program included annual censuses of numbers of storks and reproductive success at all known colonies, as well as studies to determine the environmental factors which influenced the nesting effort. Numbers of storks found in all colonies between 1975 and 1981 are shown in Tables 1 and 2. These data were collected primarily in a cooperative program between ourselves and Stephen A. Nesbitt of the Florida Game and Fresh Water Fish Commission and Herbert W. Kale of the Florida Audubon Society.

The censuses during the 1970's have shown that the total number of nesting pairs in all colonies is greater during some years than others, apparently due to differences between years in food resources (Ogden and Nesbitt 1979). In years when surface water levels are unusually high or low, and fish are less readily available to feeding birds, fewer storks attempt to nest. A conspicuous example is 1978 when only 2,595 pairs of storks, about one-half of the total pairs in the population nested in all colonies. Thus, accurate estimates of population size can only be made in years when feeding conditions seem favorable for nesting by most adult birds. Years when we suspect feeding conditions were most favorable, and when estimates of the population should therefore have been most accurate were 1975 and 1980. The colonies contained approximately 6,000 pairs in 1975, and 4,800 pairs in 1980.

Another phenomenon revealed by the annual censuses is that individual birds do not necessarily return each year to the same site to nest. In years when poor feeding conditions occur only in a part of the stork's breeding range, large numbers of birds may shift to other regions to nest, either moving into established colony sites in the latter regions, or by forming new colony sites. The decline in numbers of storks nesting in the large south Florida colonies during the 1960's and 1970's apparently has been at a greater rate than can be explained by natural mortality, and must be due in part to a shift of birds to central-north Florida and Georgia colonies. In part, these shifts seem to have resulted in permanent reduction in the size of south Florida colonies. Some of the beneficiary colonies, however, have shown only temporary increases, usually in years when feeding conditions seemed especially poor in the southern peninsula.

Overall, the colonies in south Florida which by tradition have been the largest in the United States, and where higher rates of nesting success have been measured in a few years than have been noted in any other colonies (field notes: M.P. Kahl, J.C. Ogden), have been the colonies that have experienced the most frequent failures in recent decades. The Audubon warden reports and subsequent Park Service censuses show that stork colonies in the region that is now Everglades National Park apparently produced large numbers of young in 6 out of 7 years for which we have good records during the 1940's, for only 5 of 10 years during the 1950's, during 4 of 10 years in the 1960's, and 2 years (1974-1975) during the 1970's. The smaller colonies between central Florida and southeastern Georgia have tended to produce young on a more consistent basis, and, perhaps due in part to immigration from south Florida, as a group have remained more stable in size during the 1970's.

Reproductive Success

Table 3 shows the number of pairs of Wood Storks that attempted to nest for all colonies and the number of young produced for the years 1977 through 1981. Also shown is a corrected production rate for 1978, based on the estimate that the population actually contained about 5,000 pairs, even though only about one-half of that number attempted to nest. Annual production ranged from a low of 0.45 young per pair of adults in 1978 (corrected figure) to 1.24 young per pair of adults in

1980. The 5-year mean for all colonies was 0.77 young per pair of adults in the breeding population.

An annual reproductive rate of 0.77 young per pair almost certainly is inadequate for maintaining a stable population. We used procedures described by Deevey (1970) to calculate that the European White Stork (*Ciconia ciconia*) must produce 1.5 young per pair in order to maintain population stability, based on reproduction and mortality data presented by Lack (1966). In the White Stork in Germany, first and second year mortality rates are approximately 30 percent, with a 20 percent mortality rate annually thereafter, and age of first breeding is 4 years. For purposes of this discussion, we calculated the White Stork's maximum life span at 20 years, with mortality increasing to 50 percent annually after 15 years.

Our studies of marked Wood Storks have shown that the age of first breeding is also 4 years. Little is known of mortality rates or life span for this species. We calculated the theoretical rate at which the Wood Stork population would decline, based on an annual production rate of 0.77 young per pair of adults in the population, and assuming that mortality rates and life span are similar to the White Stork. These calculations showed that the breeding population would decline at a rate of approximately 5.3 percent annually. In fact, this rate of decline is fairly similar to the observed rate of decline in the wild population between 1975 and 1980. During this 5-year span the stork population dropped from 6,000 pairs to 4,800 pairs, for a mean annual rate of decline of 4.4 percent.

It is therefore possible that recent mortality rates among Wood Storks are generally similar to those reported for the White Stork. If so, the recent rate of production by Wood Storks is only approximately one-half the rate required to maintain population stability. Higher reproductive rates than are reported here for the entire population certainly are possible by Wood Storks when feeding conditions are good. The large nesting colony at Lane River in 1974 produced at a rate of over 2.0 young for all active nests, and a similar high rate was recorded at Madeira Rookery in 1979 prior to an unseasonably heavy rain that essentially destroyed the colony.

Causes for the Decline

The above analysis strongly suggest that the Wood Stork problem is one of inadequate reproduction rather than excessive mortality. Other potential causes for the decline have been considered. Instances of storks being shot are rarely reported, and there is no evidence that storks have suffered from the effects of organochlorine poisons (Ogden et al 1974, Ohlendorf et al 1978).

Almost certainly the Wood Stork problem is one of inadequate reproduction caused by a lack of food resources, and more regionally, by a loss of suitable nesting sites (Kushlan et al 1975, Ogden and Nesbitt 1979). Convincing evidence that a change in food resources is responsible for the decline may be impossible to obtain, because quantitative data on freshwater fish numbers prior to the 1960s are lacking. Thus, it is not possible to demonstrate that a long-term decrease in fish numbers, biomass or availability has occurred in freshwater ecosystems. Tracts of freshwater wetlands do remain throughout coastal Georgia and peninsula Florida which, on the basis of area alone, appear capable of supporting larger numbers of storks than at present. Many of these wetlands are either impounded, partially drained or otherwise altered, and apparently fail to provide an adequate food supply for storks, either by not producing enough fish or by not concentrating fish in proper depths of water during the proper seasons.

Our studies of food habits and nestling growth rates of storks in several Florida colonies have shown that the number of young produced in a colony is directly related to the amount and size of fish brought to the nests by adult birds, and that the collapse of some colonies during the breeding season is correlated with conditions where food has become less available. It is not known, however, whether the increased frequency of total colony failures or reduced nestling survival has been due to food-related factors during the recent decades. Has the quality of these wetlands declined, in terms of the amount of fish they produce?

The change in frequency of successful nestings certainly has occurred, and it is almost certainly related to a deterioration in food resources. Lacking any historical information on fish dynamics, the only supporting evidence for this contention comes from the altogether sparce quantitative data on stork reproductive success that were collected in colonies during the 1920's and 1930's, mainly by egg collectors and early Audubon wardens. These data suggest that the frequency of 4-egg clutches and nests that fledged as many as 3 young was higher during the 1920's and 1930's than it has been during the 1970's.

Our studies since 1974 have shown that large numbers of 4-egg clutches (3 is the most common) and nests containing 3 large nestlings only occur when food is abundant. Thus it seems possible that if the incidence of 4-egg clutches was once greater, then food resources may have also been greater.

If we assume that the amount of fish available as food for storks is not only dependent upon the quality of freshwater wetlands, but also on the quantity of these habitats, then there is additional evidence that a loss in food resources has occurred, at least in southern Florida where we do have data on habitat changes. Browder et al (1976) categorized different wetlands habitat south from Lake Okeechobee, and showed what changes have occurred between 1900 and 1973 in the distribution and total acreage of these habitats. For 5 categories of wetlands that we consider contain the important Wood Stork feeding sites (cypress domes and strands, wet prairies, scrub cypress, freshwater marshes and sloughs, and sawgrass marshes) the total acreage had been reduced by 35 percent since 1900. Thus storks feeding in southern Florida have lost certain options about where hey are able to search for food.

A secondary factor that has possibly contributed to a reduction in nesting success by Wood Storks is an nadequate number of suitable nesting sites. Evidence hat colony sites are in short supply comes from central and northern Florida. Between the 1960 and 1975 stork censuses, only 3 of 11 colony sites in the region remained active, due in large part to a considerable shift from nesting in natural cypress swamps to nesting in trees that are standing in man-made water impoundments. Two created colony sites contained approximately 10 percent of the pairs nesting in central and north Florida in 1959 and 1960, 4 created colony sites contained 46 percent of the region's nesting storks in 1975, 6 created sites contained 59 percent in 1976 and 9 created sites contained 78 percent in 1981. The shift to nesting in created impoundments seems to be related to the fact that many natural cypress swamps are more often dry during the spring nesting season in recent years than in the past, presumably due to drainage and water management programs of more recent decades. Wood Storks, like many other colonial wading birds, normally choose flooded swamplands rather than dryer sites as nesting sites.

Our studies of Wood Stork nesting biology in created impoundments have not shown reduced rates of nesting success that could be attributed to the physical nature of these colonies, although more long-term studies might do so. Created impoundments are less stable as nesting sites, however, because they often continue to be actively managed for other purposes. As a result, some are known to suffer rather high rates of human disturbance, and others are suitable for nesting for only a few years because prolonged flooding results in the death of most woody vegetation within the impoundments.

Recovery Effort

Aside from past and planned research by the National Audubon Society and the Florida Game and Freshwater Fish Commission, and the continuation of censuses of the total breeding population, relatively little action has been taken to aid the Wood Stork. The species has been listed as endangered by the State of Florida (Kale 1978), and is being considered for addition to the Federal list of threatened and endangered species. In the nearly 2 years since the stork was initially considered for Federal listing, however, little progress has been made towards this goal. The most recent development of which we are aware was a "Notice of Review" prepared for publication in the Federal Register some time in 1981, as a means for informing the public that the stork is being considered for the Federal listing process.

At the management level, the National Audubon Society Research Department has initiated a new research program with a goal of developing techniques for creating and improving freshwater wetland sites to make them more attractive as nesting sites for colonial wading birds. In the development of this colony management program, high priority is being given to creating nesting sites that may attract Wood Storks.

In central Florida, one of the most important stork nesting sites, located in Pasco County, has been offered for sale by a local rancher of that region. Purchase of this site by an environmentally oriented organization or agency may assure the long-term survival of this important colony. The site was proposed for acquisition by the State of Florida using State endangered lands funds, with support by the Florida Game and Freshwater Fish Commission, was placed on a list of priorities, and is still under consideration for purchase.

As important as these actions are, none are directed towards what may be the major factor responsible for the stork's decline, the loss of suitable feeding habitat. Therefore, it seems most unlikely that the Wood Stork's deteriorating status in the southeastern states will improve in the near future. Its present rate of decline suggests that the agencies and organizations with an interest and responsibility for the preservation of endangered species and their habitats have about 20 years to correct the stork's problem or face the possibility of losing most of the U.S. breeding population. Considering that a great deal of research has already been conducted with the Wood Stork, and that major research programs continue, it seems unlikely that the stork will be lost due to a lack of sufficient biological information, or because the factors responsible for its decline are not known. In fact the Wood Stork is now well enough studied so that major efforts for its protection, based on sound biological information, are already possible. Solving the stork's problems will be difficult, as is often the case when habitat-related factors are the major cause of a species' decline. But the status of the Wood Stork and the adverse factors in its environment that are responsible for the decline are being identified early enough for implementation of a coordinated recovery effort. Let us hope that the Federal, State and private organizations with a role to play in this effort will respond with vigor in the near future in an effort to save this magnificient member of the southern swampland biota.

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Enclosure No. 17

STATEMENT OF
MICHAEL F. LOWE
ON BEHALF OF
PALMETTO ALLIANCE, INC
BEFORE THE
ARMED SERVICES COMMITTEE
ON THE
L-REACTOR OPERATION
SAVANNAH RIVER PLANT

FEBRUARY 9, 1983

PALMETTO ALLIANCE, INC.   2135½ DEVINE STREET   COLUMBIA, SC   29205

MY NAME IF MICHAEL F. LOWE. I AM DIRECTOR OF THE PALMETTO ALLIANCE, INC. I AM A NATIVE SOUTH CAROLINIAN. I LIVE WITH MY WIFE AND FIVE-YEAR OLD SON AT 2812 BRATTON STREET, COLUMBIA, SC. MY FORMAL EDUCATION DOES NOT QUALIFY ME AS AN EXPERT IN NUCLEAR PHYSICS OR POLITICAL SCIENCE BUT I HAVE SPENT THE MAJORITY OF MY TIME THE LAST FIVE YEARS STUDYING NUCLEAR ISSUES AS THEY RELATE TO SOUTH CAROLINA.

I SPEAK TODAY ON BEHALF OF THE PALMETTO ALLIANCE, A NON-PROFIT STATEWIDE ORGANIZATION INCORPORATED TO PROMOTE PUBLIC AWARENESS OF ENERGY ISSUES AFFECTING SOUTH CAROLINA, PARTICULARLY THE DIFFICULT PROBLEM OF NUCLEAR WASTE. PALMETTO ALLIANCE HAS OVER 400 ACTIVE MEMBERS IN SOUTH CAROLINA. WE ALSO PUBLISH THE PALMETTO NUCLEAR REPORT WHICH IS DISTRIBUTED TO A MAILING LIST OF OVER 4000 INDIVIDUALS. ALTHOUGH THE ORGANIZATION DOES PARTICIPATE IN LITIGATION IN OTHER AREAS, IT IS NOT A PARTY IN THE L-REACTOR SUIT. WE SUPPORT THE POSITONS OUTLINED BY PLAINTIFFS IN THE CASE AND TRUST STATE OFFICIALS AND FELLOW ENVIRONMENTALISTS TO PROTECT OUR LEGAL INTERESTS.

I APPRECIATE THIS OPPORTUNITY TO PRESENT OUR VIEWS TO YOUR COMMITTEE ABOUT L-REACTOR OPERATION AT THE SAVANNAH RIVER PLANT. OUR COMMENTS IN THIS HEARING WILL BE LIMITED TO CONCERNS ABOUT NUCLEAR WASTE PRODUCED BY OPERATION OF THE L-REACTOR AT SAVANNAH RIVER PLANT.

OPERATION OF THE L-REACTOR WILL ADD THE BURDEN OF BOTH HIGH AND LOW-LEVEL RADIOACTIVE WASTES ALREADY BEING DISPURSED IN THE ATMOSPHERE, TEMPORARILY STORED OR BURIED IN SOUTH CAROLINA. RADIOACTIVE NUCLIDES CLASSIFIED AS LOW-LEVEL WILL BE RELEASED AS GASEOUS OR LIQUID AFFLUENTS AT THE REACTOR SITE. SOLID LOW-LEVEL RADIOACTIVE WASTES FROM L-REACTOR ARE TO BE BURIED IN THE SAVANNAH RIVER PLANT BURIAL GROUND. HIGH-LEVEL RADIOACTIVE WASTES WILL BE PRODUCED AS A RESULT OF PROCESSING IRRADIATED TARGETS FROM L-REACTOR OPERATIONS AT CHEMICAL SEPARATING FACILITIES F AND H. RADIOACTIVE WASTE PARTICULATES PLACED IN STEEL CREEK FROM THE PREVIOUS OPERATION OF THE L-REACTOR, WILL BE FLUSHED INTO THE STATE'S RIVER SYSTEM.

IT IS UNFAIR, UNJUST, AND UNWISE TO ASK SOUTH CAROLINIANS TO TOLERATE MORE RADIOACTIVE WASTE IN THIS STATE. FOR THIRTY YEARS OUR SOIL, OUR WATER, OUR AIR AND OUR FAMILIES HAVE ABSORBED RADIOACTIVE WASTE PRODUCED AT THE SAVANNAH RIVER PLANT.

SOME PEOPLE IN THE STATE HAVE BENEFITED ECONOMICALLY, BUT FOR THE MAJORITY, THE UNANSWERED QUESTIONS ARE BEGINNING TO OUTWEIGH THOSE BENEFITS. QUESTIONS ABOUT HEALTH RISKS; ABOUT THE SAFETY IMPLICATIONS OF LIVING NEAR A NUCLEAR WEAPONS PLANT; ABOUT THE IMAGE OF THE STATE AS THE WORLD'S NUCLEAR DUMP AND IT'S ABILITY TO ATTRACT INDUSTRY AND TOURISTS. THESE DOUBTS ARE REFLECTED IN THE LEGAL STAND OUR STATE GOVERNMENT HAS TAKEN.

SOUTH CAROLINA HAS LONG SERVED THIS NATION WELL BY HOSTING THE SAVANNAH RIVER PLANT. THE TIME HAS COME FOR THE FEDERAL GOVERNMENT TO RECIPROCATE AND BEGIN CLEANING UP THE RADIOACTIVE WASTE THAT HAS BEEN IN "TEMPORARY" STORAGE HERE FOR THREE DECADES. SOUTH CAROLINIANS SHOULD SEE THESE MILLIONS OF GALLONS OF LIQUID HIGH-LEVEL NUCLEAR WASTE SOLIDIFIED AND REMOVED FOR PERMANENT DISPOSAL BEFORE THE FEDERAL GOVERNMENT CREATES EVEN MORE.

IT IS UNCONSCOINABLE FOR THE DEPUTY PLANT MANAGER TO SUGGEST THAT THE WASTE SOLIDIFICATION FACILITY MAY BE IN JEOPARDY BECAUSE OF THE OPPOSITION TO THE L-REACTOR RESTART. MUST SOUTH CAROLINA SUBMIT TO BLACKMAIL TO GAIN THE COOPERATION OF THE FEDERAL GOVERNMENT?

WE APPLAUD THE ACTIONS OF THE STATE IN THIS CASE, AND SEE THIS AS THE BEGINNING OF THE END OF YEARS OF EXPLOITATION OF OUR STATE'S GOOD WILL. GOVERNOR RILEY ACCURATELY SENSES THE MOOD IN THIS STATE WHEN HE SAID, "SOUTH CAROLINA WILL NO LONGER BE THE PATH OF LEAST RESISTANCE."; OR AS I'VE HEARD MY FARMER FRIENDS SAY, "ENOUGH IS ENOUGH AND MORE THAN ENOUGH IS TOO MUCH."

Enclosure No. 18

STATEMENT
to the
ARMED SERVICES COMMITTEE
of the
UNITED STATES SENATE
North Augusta, South Carolina
February 9, 1983
by
William P. Bebbington, PhD,
Chemical Engineer

I am a Chemical Engineer and live in Aiken, South Carolina. Eight years ago I retired from E. I. duPont de Nemours and Company at the Savannah River Plant. For the preceding twelve years I was in charge of direct technical assistance to Plant operations, a responsibility that included environmental monitoring and radiological health protection. I am not now an employe of or consultant to DuPont, any governmental agency or any segment of the nuclear industry. In presenting this statement I represent no organization. A more complete summary of my qualifications and background is attached to this statement.

The Savannah River Plant site is roughly circular, with an area of about 300 square miles. Most of the process facilities, including the nuclear reactors, are near the center of the site, several miles from its periphery. These locations were chosen to ensure that the population surrounding the Plant would be protected from any adverse effects of its operations. The site has served this purpose well—not only has the surrounding area remained free from adverse effects, but the site itself is largely so. It is one of the nation's most important field laboratories for general ecological research, a commercially productive forest, a wildlife refuge, and a public deer-hunting preserve. None of these activities is restricted by the effects of process operations.

The Savannah River has been protected from harmful warming by the distance between it and the reactors. The heat generated in the reactors is largely dissipated during the time taken by the cooling water to flow the several miles to the river. Protection of the river has been of prime importance since the Plant site was chosen. The Academy of Natural Sciences of Philadelphia, under the direction of Dr. Ruth Patrick, has studied the biological health of the river comprehensively since 1951 and Dr. Patrick has been able to say that temperature increases caused by the Plant have had no biological effects. The temperature of the river has also remained within limits set by State authorities. This record covers almost thirty years, totalling 109 reactor-years of operation. For about three years all five of the SRP reactors discharged their cooling water into tributaries of the River.

When operation of L-Reactor is resumed, plants and animals in the Steel Creek channel, part of which is through the river swamp, will indeed be damaged as they were during the earlier operation of L and P Reactors. The damage will be to species that have either survived the earlier thermal stress or that have returned naturally following its cessation. The several miles of channel have protected the River and this provides an excellent example of the justification for the large Plant site. Biological effects could have been avoided by prior clearing of all growth from the stream bed, much as is done in the clearing and maintaining of the right-of-way for a state highway or the parking lots for a shopping mall. This would have had no beneficial effect and would have delayed ultimate ecological recovery.

Probably the most important ecological research at SRP has been the study of ecological succession—the natural return of plant and animal species to old farm fields that were reserved for these studies and not reforested. Similar important information has arisen from study of the ecological recovery of Steel Creek since L-Reactor was shut down fifteen years ago. The significance of these studies well justifies the small fraction of SRP land area that is committed to them.

The quantities of radioactivity that are released from SRP and their concentrations in the environment are so small that it is quite impossible to find biological effects, if indeed there are any. Adverse effects at these low levels are only hypothetical. Nevertheless, permissible concentrations in drinking water and the related maximum amounts that are allowed in the body of any person are set very conservatively low presuming that there is some effect. The cesium in the Steel Creek swamp that will be slowly leached into the river will be so highly diluted that a person would have to drink ludicrously prodigious quantities of Savannah River water in order to ingest the permissible body burden.

All of this information has been well documented in reports readily available to anyone who has been interested, even before the issuance of "Environmental Assessment - L-Reactor Operation - Savannah River Plant. Before I retired I wrote a booklet for public information, "Nuclear Operations and the Environment", thousands of copies of which have been distributed over the past decade. Each year, SRP issues a report in each of two series, "Environmental Monitoring in the Vicinity of the Savannah River Plant" and "Environmental Monitoring at the Savannah River Plant". Both of these have a great many data, charts, maps and references as well as explanations of the bases and methods of calculation. Large reports have been issued by the Academy of Natural Sciences of Philadelphia and these were summarized about a year ago in "Biological Surveys on the Savannah River in the Vicinity of the Savannah River Plant (1951-1976)." The "Final Environmental Impact Statement - Waste Management Operations - Savannah River Plant", issued in 1977, covers all types of effluents and effects and includes several pages devoted to the cesium in the swamp. Two large reports were issued about a year ago with special regard to the resumption of L-Reactor operation, "Environmental Information Document - L-Reactor Reactivation" and "Evaluation of the Steel Creek Ecosystem in Relation to the Proposed Restart of L-Reactor."

All such reports are available to the public, governmental authorities and the news media. The library of the University of South Carolina at Columbia is an official repository for reports issued by the Department of Energy, the Nuclear Regulatory Commission and their predecessor agencies. DOE maintains a public reading room in the Federal office building in Aiken. The room seems to be little used; I have never encountered another person, there. Notices of intent to prepare environmental impact statements are printed in the newspapers and in response to them I have asked for and received draft copies and have submitted comments that have been considered, answered and included in the final statement. As the result of this show of interest, such notices and drafts are now sent to me without specific request. Such material now occupies nearly four feet of my bookshelves.

Last December after Senator Hollings and some South Carolina State Government officials announced that they would seek an Environmental Impact Statement on the resumption of operation of L-Reactor, I wrote letters to them, with a copy to Governor Riley, calling attention to the wealth of information already available and stating my belief that another formal Statement would entail an unnecessary and unproductive expenditure of time and money. Senator Hollings replied, "The information you cite is interesting and valuable. I was not aware of it before...(and)...most of that information has not been disseminated widely or subject to public scrutiny." South Carolina State Senator Alex Sanders wrote, "I will try to keep an open mind on the matter and will review further the determinations of Dr. Patrick and her staff, which you called to my attention. I will also review the Final EIS...which you mentioned." It seems to me inexcusable that public officials who profess great concern about matters such as this do not inform themselves thoroughly before making judgments and taking actions.

The people who are responsible for the spending of public funds at the Savannah River Plant are on the horns of a dilemma. They must decide how much of the taxpayers' money it is prudent to spend to protect and to inform the public. In this instance, the easy way would have been to accede to the demand for an Environmental Impact Statement and spend the necessary additional money and technical effort to get the job done with the least possible delay. They do, after all, have the responsiblity to meet the production goals that have been set by Congress. I believe their decision not to prepare the statement was proper.

For guidance in matters such as this, I strongly recommend two general principles enunciated by the Advisory Committee on the Biological Effects of Ionizing Radiation, Division of Medical Sciences, National Academy of Science/National Research Council in their 1972 report. The principles derived from consideration of radiation but pertain equally well to other risks:

> "No exposure to ionizing radiation should be permitted without the expectation of a commensurate benefit.
>
> "The public must be protected from radiation but not to the extent that the degree of protection provided results in the substitution of a worse hazard for the radiation avoided. Additionally there should not be attempted the reduction of small risks even further at the cost of large sums of money that spent otherwise would clearly produce greater benefit."

The money and time that would be needed to prepare the Environmental Impact Statement for L-Reactor could clearly be put to better use.

Respectfully submitted,

William P. Bebbington
905 Whitney Drive
Aiken, SC 29801
(803) 649-2790

Professional Qualifications and Experience

William Pearson Bebbington

Dr William P. Bebbington, a resident of Aiken, South Carolina, received his PhD in Chemical Engineering from Cornell University. His professional career was entirely with E. I. duPont de Nemours and Company from which he retired at the end of 1974. He came to South Carolina in 1952 as a member of the initial technical staff of the Savannah River Plant. At SRP he held assignments in the technical management of research and development and plant technical assistance in the areas of heavy-water production, the chemical processing of reactor fuels and the management of highly radioactive wastes. During his last twelve years at SRP he was General Superintendent of the Works Technical Department with responsibility for all aspects of the nuclear fuel cycle and also for radiation protection and environmental monitoring.

Bebbington has published technical papers on the production of heavy water, nuclear criticality safety, and environmental effects. He is the author of a SCIENTIFIC AMERICAN article on the reprocessing of power-reactor fuels and of a booklet on radioactive wastes that has been widely distributed by the American Institute of Chemical Engineers. He also wrote a review of SRP effects, "Nuclear Operations and the Environment", thousands of copies of which have been distributed to SRP visitors, news media and governmental agencies.

Bebbington is a Fellow of the American Institute of Chemical Engineers and served as Chairman of its Nuclear Engineering Division and of its Savannah River Section. In 1979 he received the AIChE's Robert E. Wilson Award in Nuclear Chemical Engineering.

Bebbington is an amateur Botanist and Plant Ecologist and has taught the course, "Man and his Environment" at the University of South Carolina - Aiken. His collection of the flora of Hitchcock Woods formed the nucleus of the herbarium at USC-A.

2/4/83

Enclosure No. 19

Statement by Ruth Patrick

Francis Boyer Chair

and

Senior Curator of Limnology

Academy of Natural Sciences

I am Ruth Patrick and I occupy The Francis Boyer Chair of Limnology and am Senior Curator of Limnology at the Academy of Natural Sciences in Philadelphia. My qualifications as a Limnologist, that is a River Scientist, are attached. It may be of interest to you that I am a graduate of Coker College. I later received an LLD degree from Coker, I have been a member of its board of Trustees and more recently I was designated as a distinguished alumna of Coker. At present I am an honorary member of the South Carolina Academy of Sciences. I mention these qualifications to emphasize the fact that I have been interested in South Carolina, particularly its rivers for a long period of time.

I and my colleagues at the Academy of Natural Sciences began our studies of the Savannah River in the vicinity of the Savannah River Plant in 1951. In starting these studies, the first thing we did was to acquaint ourselves with the river from headwater to mouth. This was done by riding along the course of the river and entering it at various points. In those days Clark Hill Dam and Hartwell Dam had not been built. The river frequently flooded out of its channel and into its well developed flood plain. The flood plain was and still is a very important supplemental resource to the River, because the flood plain ponds connect to the river in the spring and serve as a breeding and nursery ground for many invertebrates and some fish.

The Savannah River below Augusta, as characteristic of most large rivers, meanders widely and many oxbows are formed. It is these meanders which forces the water into a spiral flow which insures thorough mixing. Typically, any pollutant, chemical or heat, entering the river is thoroughly mixed after the flow passes around one or two meanders.

During the time span of our studies many things have happened to the river. Clark Hill Dam was completed in March 1953 and Hartwell Dam was completed in June 1962. The main alterations of the river's course by a dredging, the placing of revetments and rip rapping was started before our first survey. However, the major shortening of the channel in the region of the Savannah River plant occurred between 1954 and 1960. This forced the relocation of our Stations 5 and 6. At the time of our first survey there were approximately 15 sources of effluents which entered directly or through tributary streams into the Savannah River. By 1976 this number had been increased to 30 and many of the additional sources were quite large.

The purpose of our studies was to develop a baseline of the condition of aquatic life in the Savannah River before the Savannah plant site started to operate in order that the effects of the activities of the Savannah River plant on the river could be measured in the future. We were not after immediate effects but rather the effects of effluents from the activitites on the Savannah River site on the life of the river downstream from where the effluents might enter. In other words the study was designed to show the effects on the general health of the river and to make sure that as the river left the boundaries of the plant site it was in good condition for aquatic life. We were not concerned with the effects of radionuclides, but with the effects of chemicals and heat that might enter the river.

After considerable studies of the river and after gaining information as to where effluents from the Savannah River site might enter the river the following areas were selected. Station 1 was located above the plant, Figure 1. The exact mile location is given in Table 1. Station 3 was located downstream. from Four Mile Creek. Station 5 was located downstream from Penn and Steel Creek and Station 6 was located downstream Lower Three Runs.

To carry out these thorough studies it was important that we examine the bacteriological, chemical, and physical characteristics of the river as well as studying all the major groups of aquatic life which are important in the cycling and nutrients and the destroying of waste that might enter the river. Particular attention was also paid to the major food webs in the river. This meant studying the bacteria, the protozoa, various macroinvertebrates, such as molluscs and insects and fish. The times at which these studies were made during the 25 year period are listed in Table 2..

To supplement these thorough studies quarterly studies were made each year these were less extensive than the thorough studies. Each study consisted of two specialist in aquatic life entering the river and studying Station 1 above the plant and Station 6 below Lower Three Runs to determine if any change occurred from the previous survey or from the previous thorough study. An Entomologist was present on every study and collected insects since these organisms are very sensitive to chemical and temperature changes. Accompanying the Entomologist was a specialist that was either a fish specialist, a mollusc specialist or a algae specialist. They would spend one or more days at each station examining a particular group of organisms and making general observations of river conditions.

A third set of studies which are continuous was started in the fall of 1953. These continuous studies of periphyton are made at Station 1 above the plant and at Station 6 below Lower Three Runs. In 1959 an additional site of study was established at Route 301 Bridge as some unusual conditions were noted in this area. Periphyton are very sensitive to pollution and record short-term changes. They are indicators that something may be happening that is changing the status quo. They signal more detail studies.

The thorough studies referred to above require a team of specialist. Each specialist spends a day or more at each station collecting. In making such collections the relative sizes and structure of the populations of each species is noted. Habitat and general characteristics of the study area are recorded. All organisms are determined to species if the organism is mature enough for such analysis. These teams consist of seven or more scientist.

It is generally recognized that natural streams are characterized by many species preforming each of the major steps in nutrient transfer. The effects of pollution is to alter the numbers of species, change the kinds of species, and alter their relative abundance. The structure of the age classes composing the populations may be changed. The bacteriological, chemical and physical characteristics which had been continually studied are listed in Table 2 . Other studies have been added in recent years, such as sodium, potassium, manganesium, total nitrogen, total phosphorus and volatile solids.

Results of Studies

I have made by a series of histograms and graphs a brief summary of the results of the more thorough studies which are substantiated by the quarterly studies and the periphyton results. Because of shortness of time I have concentrated on shifts in numbers in the more important groups of species. This is a quantitative as well as a qualitative measure. I have correlated these changes with chemical and physical data.

Algae

Phytoplankton.

Phytoplankton studies were carried out in the first four studies. These organisms were mainly scuffed up benthic forms and therefore these studies were discontinued.

Benthic and periphyton studies.

The results of the algae studies, Fig. 2 show that through 1955 the pattern of diversity as expressed by the number of species shows considerable variation. This was the period when the flow was very variable, particularly the minimum flow Table 4. Such variation would have considerable effect on benthic algae. Of course there were also other variables that influenced algal production but there is no very evident correlation. From 1956 through the summer of 1968 which was the period that L Reactor was operating we see a very similar pattern - L Reactor closed down before the spring 1968 survey. From the August-September period 1968 through the 1976 studies we usually find a decrease in the number of species largely caused by a decrease in diatoms. This slight decrease seems to be correlated with an increase in chlorides Fig. 3. Since this is typically a soft water river and in such rivers chlorides are very low, any increase might produce a slight shift in the flora. This effect was also evident in the 1980 studies, when the chlorides were at similar levels. There were other shifts in the chemistry of the water but these were more irregular and showed less of a correlation.

In the period from 1951 to 1980 diatoms were the dominant algal group. The kinds of diatoms, i.e., the naviculoid species which are preferred prey species were the common species. Blue green algae varied in abundance but were never a major component of the flora. If severe temperature effects had been present such a change would probably have occurred.

Protozoa

The pattern of the number of species of protozoa at the various stations is quite similar from August-September 1956 to August 1968, Figure 4. In May 1972, the protozoan fauna increased in number of species a small amount. In September 1972 and in August 1976 this increase was more pronounced. This increase was mainly caused by an increase in number of species of Phytoflagellates and Ciliates, Figures 5, 6. There seems to be some correlation with an increase in ammonia, Figure 7 during these two studies which is a nutrient source for Phytoflagellates.

The increase in Ciliates which prey on bacteria may be correlated with some increase in bacteria and BOD in this period.

Mollusca

The mollusca fauna was very variable as to species numbers before May 1960. (Survey 8), Fig. 8 . After that date the patterns of species numbers were more similar at the various stations. There is no evidence that this fauna was impacted by the operation of L Reactor.

The most unfavorable condition for the development of the native clam population is the invasion of the Japanese clam, Corbicula, in large numbers into the Savannah River.

Insect

The insect fauna was variable as to number of species, particularly at

Station 6 from 1951 through May 1956, Survey 7, Figure 9. This was the period when not only Clark Hill Dam became functional but also the river channel was being severely altered. Both of these physical changes would affect the insect fauna. Dredging became much less after the tenth study (1965) and there is a general small increase in diversity. The insect fauna has always been characterized by a type of diversity found in natural healthy rivers. The population of stoneflies, mayflies, caddice flies and damsel and dragon flies were composed of age classes one would expect at the season of the year when the studies were made.

Fish Fauna

Since Clark Hill Dam came into operation and the minimum flow has stabilized there has been a diverse fish fauna characteristic of a natural stream of this type, Figure 10. A comparison of the species population at the various stations gives no evidence that fish movement was impared when L Reactor was operative.

From an analysis of the fauna and flora of the Savannah River in the vicinity of the Savannah River Plant, there was n evidence that the operations on the Savannah River Site were producing adverse effects at these study areas.

Chemical and physical analyses of the water

Most of the analyses over time showed variability but no particular trend. The parameter of greatest interest in relation to the restarting of L Reactor is temperature. An analysis of Fig. 11 shows seasonal effects of temperature. Seasonal variation was greater before the operation of Clark Hill Dam which maintained a higher minimum flow. There is no evidence of a drop in temperature after the closure of the L Reactor in February 1968. Likewise, the dissolved oxygen showed no trend related to warmer water which would have occurred if L Reactor had produced a significant change in temperature. It must be remembered that our Stations are 5-6 miles downstream from Four Mile Creek and Penn and Steel Creeks.

In conclusion one can say that in our study area there was no evidence that L Reactor while in operation degraded the health of the river.

TABLE 1.

Descriptive Summary of Stations Used by the Academy of Natural Sciences of Philadelphia for Surveys on the Savannah River

Station	Location	Survey Numbers	Description
1	Mile 160.7 (old 175.1)	1-16	Dikes and sandy beaches on L. bank. Gentle slope with stone revetment and small stream on R. bank. Overhanging willows, straight section of river.
3	Mile 143.9 (old 157.5)	1-16	Dikes and sandy beaches or L. bank. Fairly steep R. bank with stone revetment and small stream. Overhanging willows, straight section of river.
5 (old)	Old Mile 149.5	1-7	Sandy beaches on both banks with small stream on L. bank. Much debris. Curved section of river, with steep outer banks.
5 (new)	Mile 135.8 (old 149.5)	8-16	Similar to Old Station 5 Sandy beaches with small stream on L. bank. Much debris. Curved section of river with steep outer banks.
6	Mile 123.1 (old 134.5)	1-16	Sandy beaches on curve of river. Slough on R. bank designated Station 6B as opposed to river proper at 6A. Much debris.

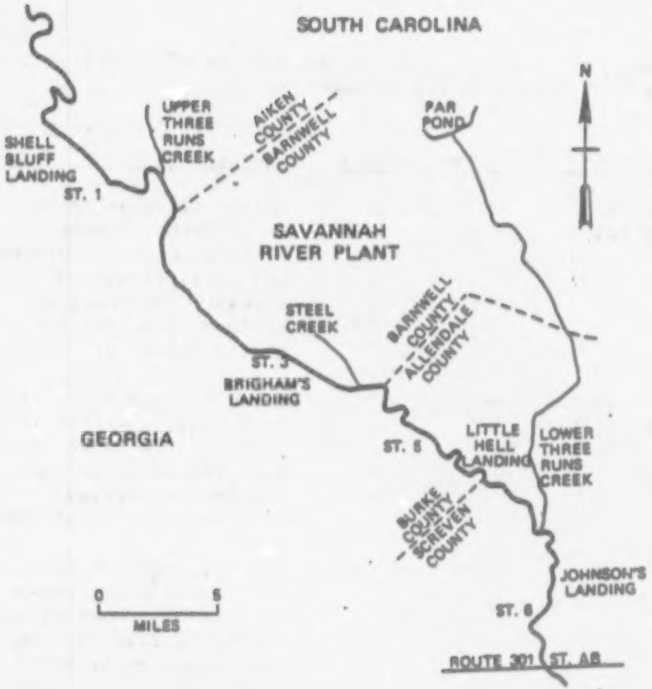
SOUTH CAROLINA
N
SHELL BLUFF LANDING
ST. 1
UPPER THREE RUNS CREEK
AIKEN COUNTY
BARNWELL COUNTY
PAR POND
SAVANNAH RIVER PLANT
STEEL CREEK
ST. 3
BRIGHAM'S LANDING
BARNWELL COUNTY
ALLENDALE COUNTY
GEORGIA
ST. 5
LITTLE HELL LANDING
LOWER THREE RUNS CREEK
BURKE COUNTY
SCREVEN COUNTY
JOHNSON'S LANDING
ST. 6
0
5
MILES
ROUTE 301
ST. AB

Figure 1. Survey Stations Used By the Academy of Natural Sciences of Philadelphia on the Savannah River (1951-1976).

TABLE 2

Chronology of Surveys Conducted by the Academy of Natural Sciences of Philadelphia on the Savannah River (1951-1976)

Survey No.	Survey Dates		Reactors in Operation*				
1	1951:	June 25 - July 14	None				
2		Oct. 15 - Nov. 31	None				
3	1952:	Jan. 9-31	None				
4		May 5-22	None				
5	1954:	Aug. 15-30	R	P	L		
6	1955:	Aug. 24 - Sept. 7	R**	P	L	K	C**
7	1956:	May 6-22	R	P	L	K	C
8	1960:	May 23 - June 4	R	P	L	K	C
9		Aug. 31 - Sept. 15	R**	P	L	K	C
10	1965:	May 30 - June 8		P		K	C
11		Sept. 21-30		P	L	K	C
12	1968:	May 27 - June 5				K	C
13		Aug. 24 - Sept. 2		P		K	C
14	1972:	May 22 - June		P		K	C
15		Sept. 13-22		P		K	C
16	1976:	Aug. 10-16		P		K	C

---

* R reactor discharged into Lower Three Runs Creek until 1958 then discharged into Par Pond until it was shutdown in 1964;

P reactor discharged into Steel Creek until 1963, then discharged into Par Pond;

L reactor discharged into Steel Creek until it was placed on stand-by in 1968;

K reactor discharges into Pen Branch Creek;

C reactor discharges into Four Mile Creek

** Reactor up for part of survey.

Table 3. Chemical analyses.

Alkalinity, Methyl Orange (mg/L as $CaCO_3$)
Alkalinity, Phenylthphlein (mg/L as $CaCO_3$)
Alkalinity, Carbonate (mg/L)
Alkalinity, Bicarbonate (mg/L)
Bacteria, Coliform Count (col/100 mL)
Bacteria, MPN (cell/100 mL)
Bacteria, Plate Count (col/mL)
Bacteria, Total Count (col/mL)
Bacteria, Viable Count (col/mL)
Carbon Dioxide (mg/L)
Dissolved Oxygen (mg/L)
Chloride (mg/L)
Specific Conductivity (µmho at 25°C)
Hardness, Total (mg/L as $CaCO_3$)
Hardness, Ca (mg/L as $CaCO_3$)
Hardness, Mg (mg/L as $CaCO_3$)
Calcium (mg/L)
Iron (mg/L)
Magnesium (mg/L)
Manganese (mg/L)
Potassium (mg/L)
Sodium (mg/L)
Ammonia (mg/L)
Total Kjeldahl Nitrogen (mg/L)
Nitrate (mg/L)
Nitrite (mg/L)
Biological Oxygen Demand (mg/L)
Chemical Oxygen Demand (mg/L)
Total Phosphorus (mg/L)
Ortho-Phosphorus (mg/L)
Silica (mg/L)
Total Solids (mg/L)
Total Dissolved Solids (mg/L)
Fixed Solids (mg/L)
Suspended Solids (mg/L)
Volatile Solids (mg/L)
pH
Temperature (°C)
Sulfate (mg/L)
Transparency (in.)
Turbidity (mg/L)

TABLE 6.

Minimum, Maximum, and Average Flows of the Savannah River (Measured at Augusta)

Water Year (Oct-Sept)	Minimum (cfs)	Maximum (cfs)	Average (cfs)
1950-51	1,710	41,400	6,766
1951-52	1,770	38,600	8,596
1952-53	3,260	34,800	6,561
1953-54	5,460	22,300	7,293
1954-55	4,180	22,400	5,487
1955-56	3,580	14,600	5,398
1956-57	5,170	15,200	6,572
1957-58	5,000	57,100	11,360
1958-59	5,260	28,200	7,125
1959-60	5,350	33,200	12,450
1960-61	4,930	30,300	8,873
1961-62	4,760	28,200	9,276
1962-63	5,130	30,600	9,554
1963-64	6,120	84,500	16,580
1964-65	6,300	33,000	12,940
1965-66	6,160	34,500	9,509
1966-67	5,740	20,900	8,372
1967-68	5,890	32,200	9,043
1968-69	5,800	44,100	9,812
1969-70	5,870	23,200	7,032
1970-71	4,460	59,700	8,668
1971-72	6,220	32,700	10,240
1972-73	5,460	38,100	13,200
1973-74	5,450	29,300	9,822
1974-75	5,520	43,900	11,690
1975-76	6,750	31,900	12,110
1976-77	6,000	32,200	11,030

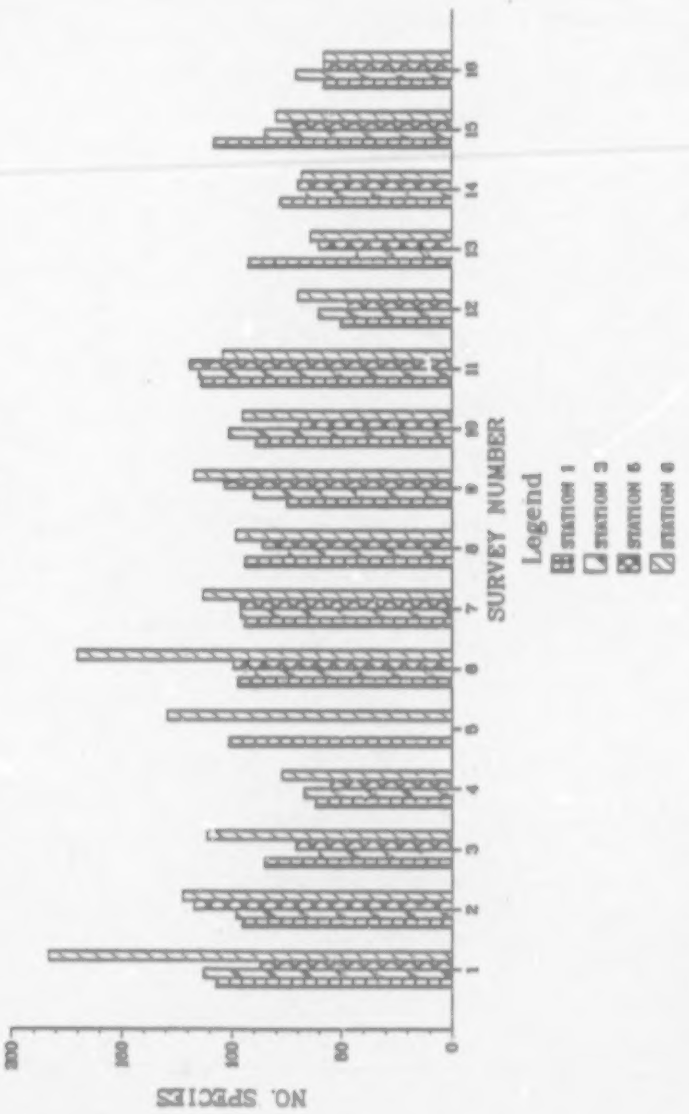
ALGAE
NO. SPECIES
0
50
100
150
200
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
SURVEY NUMBER
Legend
▦ STATION 1
☐ STATION 3
▩ STATION 5
▨ STATION 6

FIGURE 2.

CONCENTRATIONS OF CHLORIDE

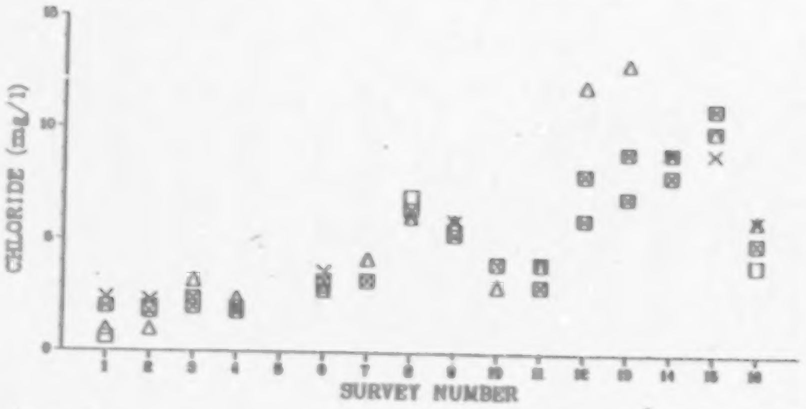

FIGURE 3

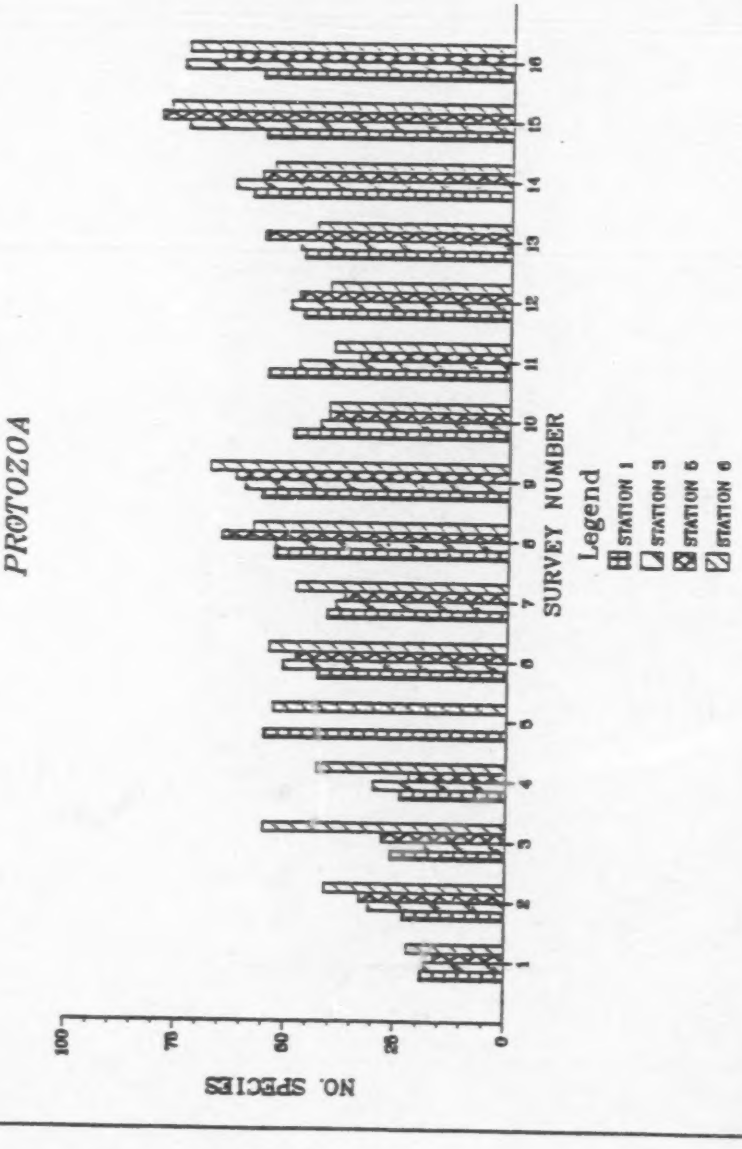
PROTOZOA
NO. SPECIES
0
25
50
75
100
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
SURVEY NUMBER
Legend
⊞ STATION 1
▱ STATION 3
⊠ STATION 5
▨ STATION 6

FIGURE 4.

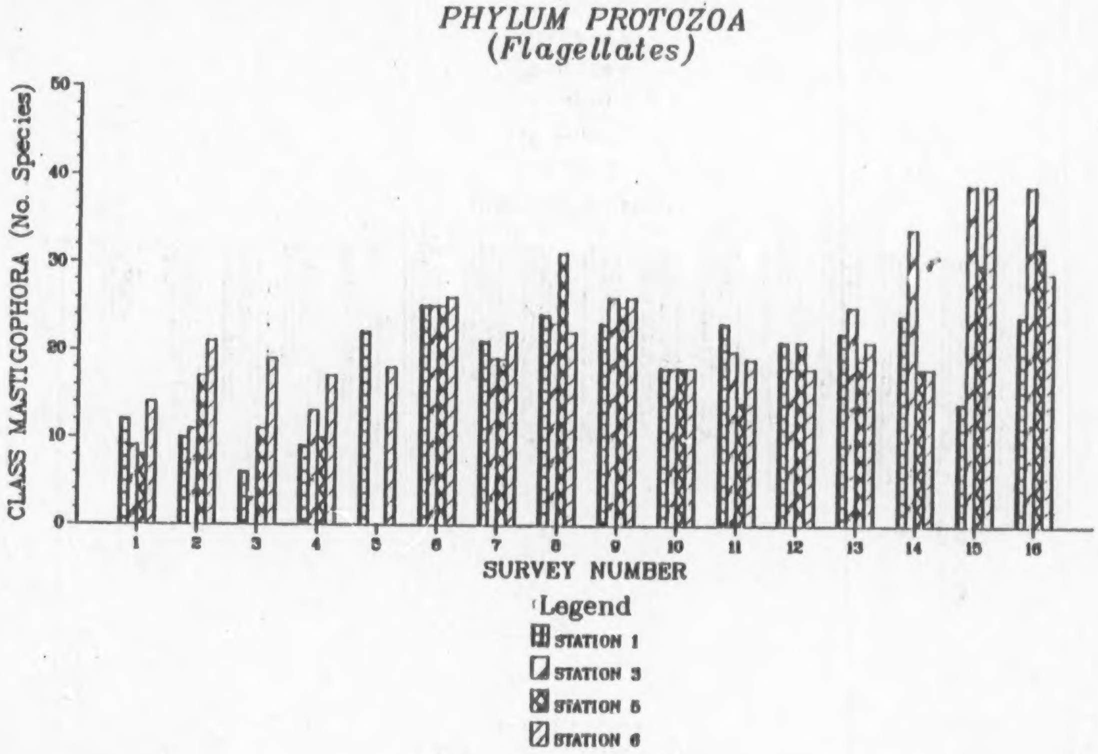
PHYLUM PROTOZOA
(Flagellates)
CLASS MASTIGOPHORA (No. Species)
0
10
20
30
40
50
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
SURVEY NUMBER
Legend
STATION 1
STATION 3
STATION 5
STATION 6

FIGURE 5.

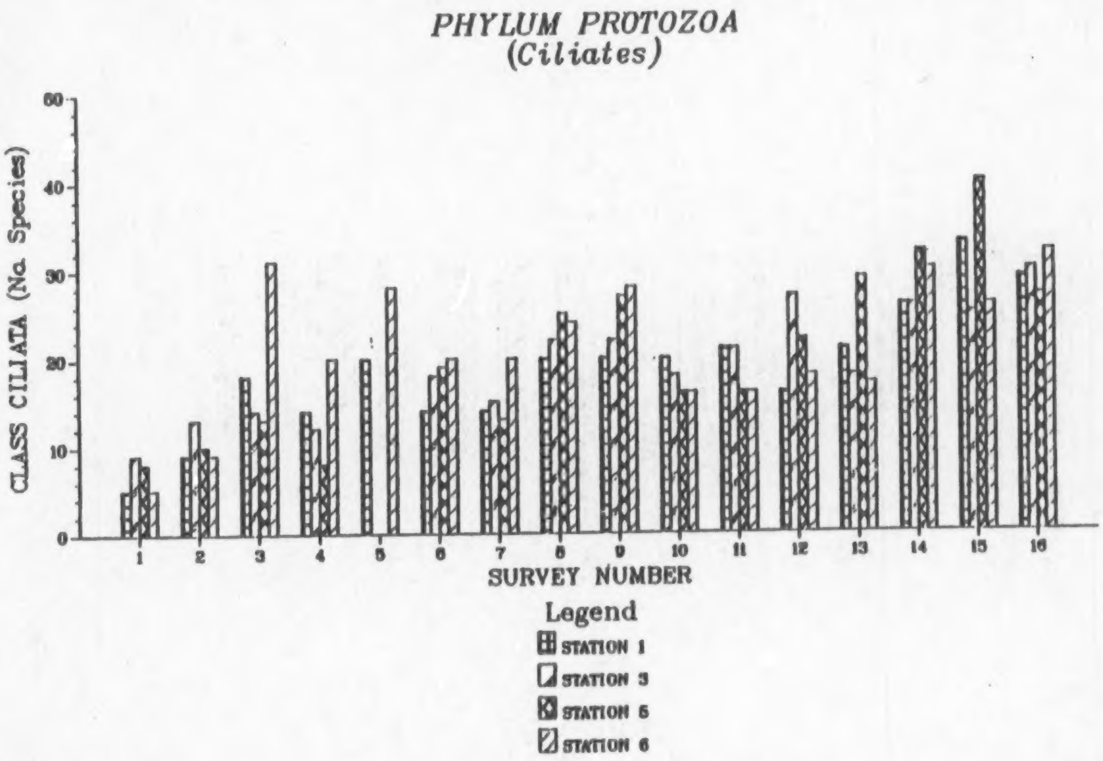
PHYLUM PROTOZOA
(Ciliates)
CLASS CILIATA (No. Species)
60
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
SURVEY NUMBER
Legend
STATION 1
STATION 3
STATION 5
STATION 6

FIGURE 6

CONCENTRATIONS OF AMMONIA

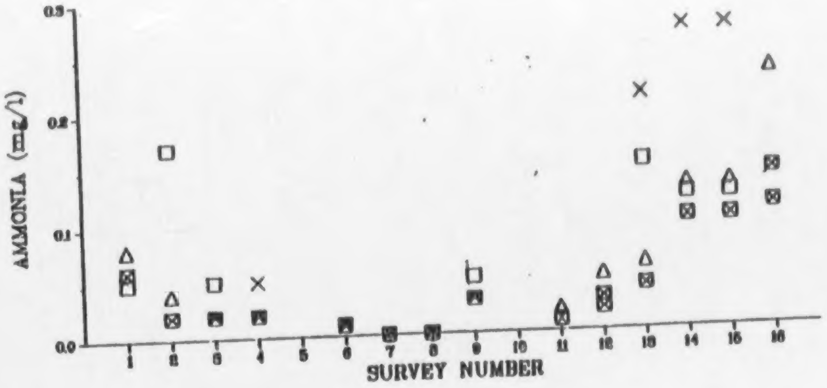

FIGURE 7

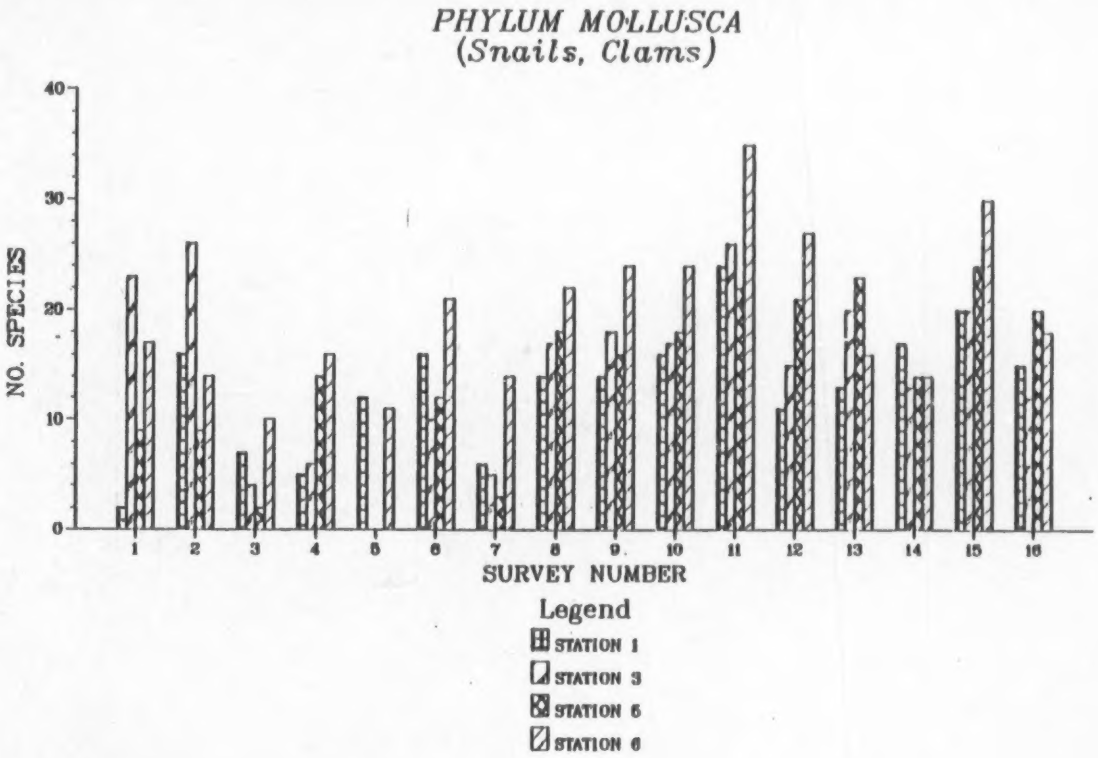
PHYLUM MOLLUSCA
(Snails, Clams)
NO. SPECIES
0
10
20
30
40
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
SURVEY NUMBER
Legend
STATION 1
STATION 3
STATION 5
STATION 6

FIGURE 8.

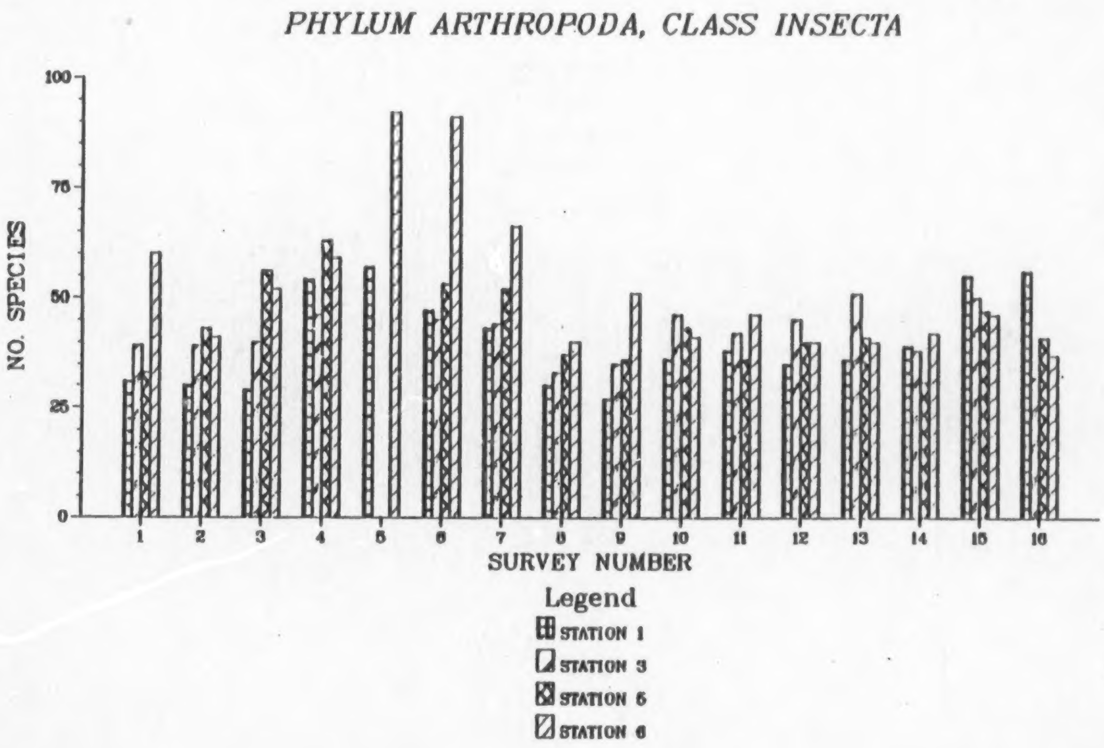
PHYLUM ARTHROPODA, CLASS INSECTA
NO. SPECIES
100
75
50
25
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
SURVEY NUMBER
Legend
STATION 1
STATION 3
STATION 5
STATION 6

FIGURE 9.

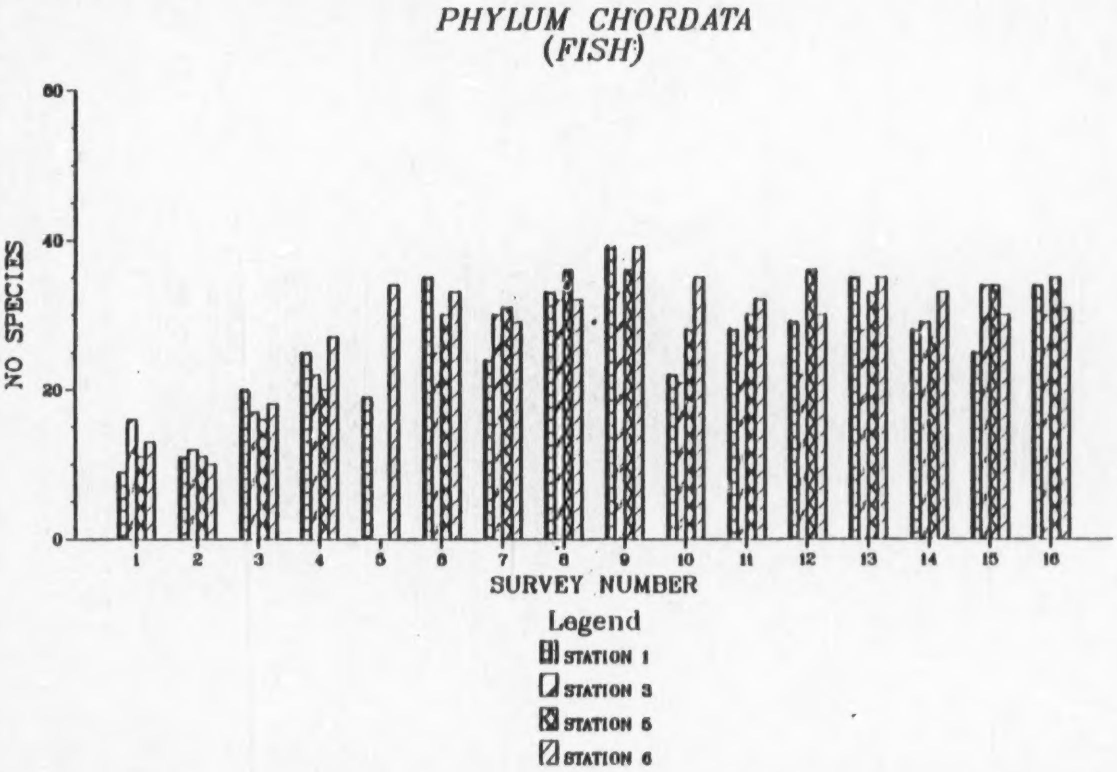
PHYLUM CHORDATA
(FISH)
NO SPECIES
0
20
40
60
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
SURVEY NUMBER
Legend
STATION 1
STATION 3
STATION 5
STATION 6

FIGURE 10.

TEMPERATURE DATA

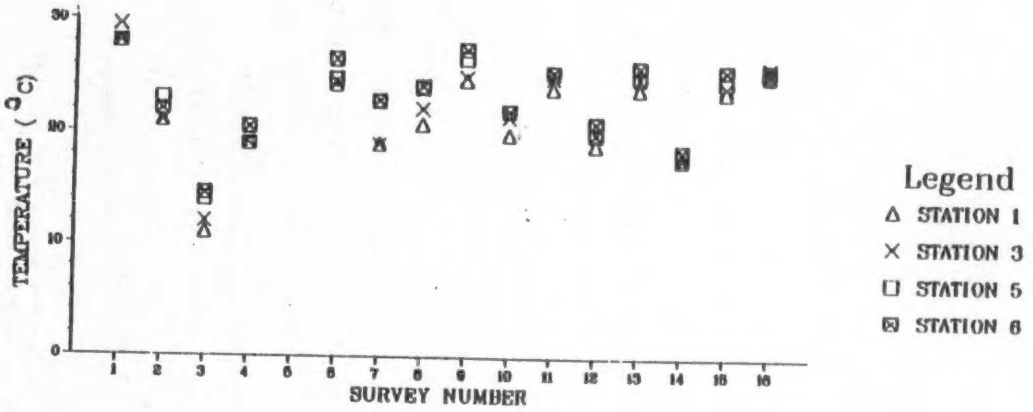

FIGURE 11.

BIOGRAPHICAL DATA FOR DR. RUTH PATRICK

Born: Topeka, Kansas

Family: Married to Dr. Charles Hodge, IV
One son, Charles Hodge V

Education: B.S., Coker College, Hartsville, South Carolina
M.S., University of Virginia, Charlottesville, Virginia
Ph.D., University of Virginia, Charlottesville, Virginia

Professional Positions:

Honorary Chairman, Board of Trustees of the Academy of Natural Sciences of Philadelphia, 1976 - Present.
Chairman, Board of Trustees of the Academy of Natural Sciences of Philadelphia, 1973 - 1976.
Occupant of Francis Boyer Research Chair, Limnology Department, Academy of Natural Sciences of Philadelphia, 1973 - Present.
Curator of Limnology Department, Academy of Natural Sciences, 1947 - Present.
Chairman, Limnology Department, Academy of Natural Sciences, 1947 - 1973 (established Department).
Adjunct Professor, University of Pennsylvania, 1970 - Present.
Lecturer in Botany, University of Pennsylvania, 1950 - 1970.
Guest Fellow of Saybrook, Yale University, 1975.
Curator, Leidy Microscopical Society, Academy of Natural Sciences, 1937 - 1947.
Associate Curator, Microscopy Department, Academy of Natural Sciences, 1939 - 1947.
Lecturer in Algae Course, Marine Biological Laboratory, Woods Hole, Massachusetts, 1951 - 1955.
Mellon Lecturer in Aquatic Biology, Yale University, Fall, 1980.

Other Positions Connected with Scientific Work:

Limnological expedition to Mexico in 1947, sponsored by American Philosophical Society.
Leader of the expedition to Peru and Brazil in 1955, sponsored by the Catherwood Foundation.
President of Phycological Society of America, 1954.
Chairman of Algae Committee of Smithsonian Oceanographic Sorting Center, U. S. National Museum, 1963 - 1968.
Delegate to the General Assembly of International Union of Biological Sciences in Bergen, Norway, 1973.
President of American Society of Naturalists, 1975.

Honors:

A. Awards

Recipient of Richard Hopper Day Memorial Medal from the Academy of Natural Sciences, 1969.
Recipient of Gimbel Philadelphia Award for 1969.
Recipient of YWCA's Gold Medal, 1970.
Elected to National Academy of Sciences, May, 1970.
Recipient of Franklin Institute's Lewis L. Dollinger Pure Environment Award, 1970.
Recipient of Pennsylvania Award for Excellence in Science and Technology for 1970.
Recipient of Merit Award from the Botanical Society of America, 1971.
Recipient of Eminent Ecologist Award from the Ecological Society of America, 1972.
Recipient of 1973 Philadelphia Award.
Elected to the American Philosophical Society, 1974.
Recipient of Gold Medal Award from Pennsylvania State Fish and Game Protective Association, 1974.
Recipient of Second Annual International John & Alice Tyler Ecology Award, 1975.
Recipient of Gold Medal from the Philadelphia Society for Promoting Agriculture, 1975.
Recipient of Golden Plate Award from the American Academy of Achievement, 1975.
Elected to Honorary Membership in South Carolina Academy of Sciences, 1975.
Recipient of Department of Interior's Public Service Award, 1975.
Elected to American Academy of Arts and Sciences, 1976.
Recipient of Iben Award of American Water Resources Association, 1976.
Recipient of Outstanding Alumni Award from Coker College, 1977.
Recipient of the Frances K. Hutchinson Medal from the Garden Club of America, 1977.
Recipient of Honorary Membership in the Water Pollution Control Federation, 1977.
Recipient of The Outstanding Alumna award from Sunset Hill School, Kansas City, Missouri, 1977.
Recipient of Golden Medal of the Royal Zoological Society of Antwerp, Belgium, 1978.
Recipient of Green World Award of New York Botanical Garden, 1979.
Recipient of Hugo Black Award of the University of Alabama, 1979.

B. Honorary Degrees

Recipient of Honorary D.Sc. from Beaver College, 1970.
Recipient of Honorary D.Sc. from PMC Colleges, 1971 (now Widener College)
Recipient of Honorary L.LD. from Coker College, 1971
Recipient of Honorary D.Sc. from Philadelphia College of Pharmacy and Science, 1973.
Recipient of Honorary D.Sc. from Cedar Crest College, 1974.
Recipient of Honorary D.Sc. from Wilkes College, 1974.
Recipient of Honorary L.H.D. from Chestnut Hill College, 1974.
Recipient of Honorary D.Sc. from Hood College, 1975.

Recipient of Honorary D.Sc. from Medical College of Pennsylvania, 1975.
Recipient of Honorary D.Sc. from Drexel University, 1975.
Recipient of Honorary D.Sc. from Swarthmore College, 1975.
Recipient of Honorary D.Sc. from University of New Haven, 1975.
Recipient of Honorary D.Sc. from Bucknell University, 1976.
Recipient of Honorary D.Sc. from Rensselaer Polytechnic Institute, 1976.
Recipient of Honorary D.Sc. from St. Lawrence University, 1978.
Recipient of Honorary D.Sc. from University of Massachusetts, 1980.
Recipient of Honorary D.Sc. from Princeton University, 1980.

C. Committees

Member of President Johnson's Science Advisory Committee, Panel on Water Blooms, 1966.
Member of Governor Scranton's Science Advisory Committee, Panel on Pollution Control and Water Resources, 1966.
Chairman of Panel of the Committee on Pollution of the National Academy of Sciences, Washington, D. C., 1966.
Member of Department of Interior's National Technical Advisory Committee on Water Quality Requirements for Fish, Other Aquatic Life, and Wildlife, 1967 - 1968.
Member of Governor Shafer's Science Advisory Committee, 1967 - 1968.
Member of Citizens' Advisory Council of Pennsylvania Department of Environmental Resources, 1971 - 1973.
Member of Hazardous Materials Advisory Committee of Environmental Protection Agency, 1971 - 1974.
Member of Governor Shapp's Science Advisory Council, 1972 - 1978.
Member of Advisory Council, Electric Power Research Institute, 1973 - 1977.
Member of Advisory Committee for Research, National Science Foundation, 1973 - 1974.
Member of Committee on Environmental Alterations of the American Association for the Advancement of Science, 1973 - 1974.
Member of Committee on Science and Public Policy of the National Academy of Sciences, 1973 - 1977.
Member of Environmental Measurements Panel of the Committee on Remote Sensing Programs for Earth Resource Surveys, National Academy of Sciences, 1973 - 1974.
Member of Nominating Committee for 1973 - 1974 and 1974 - 1975 of the National Academy of Sciences.
Member of National Academy of Engineering's Committee on Environmental Engineering's Ad Hoc Study on Explicit Criteria for Decisions in Power Plant Siting, 1973.
Member of Advisory Council, Renewable Natural Resources Foundation, 1973 - 1976.
Member of the Council, Smithsonian Institution, 1973 - Present.
Member of Energy Research and Development Advisory Council to President's Energy Policy Office, 1973 - 1974.
Member of Philadelphia Advisory Council, 1973 - 1976.

Member of Executive Advisory Committee of Federal Power Commission, National Power Survey, 1972 - 1975.

Member of Executive Advisory Committee of Environmental Protection Agency, 1974 - 1979.

Chairman, Panel on Ecology of Executive Advisory Committee, Environmental Protection Agency, 1974 - 1976.

Member of Committee on Human Resources, National Research Council, 1975 - 1976.

Member of Advisory Council for Department of Biology, Princeton University, 1975 - Present.

Member of General Advisory Committee, U. S. Energy Research and Development Administration, 1975 - 1977.

Member of Committee on Science and the Arts of The Franklin Institute, 1978 - Present.

Member of University Council Committee for the Yale School of Forestry and Environmental Studies, 1978 - Present.

Member of Science Advisory Council of World Wildlife Fund - U.S., 1978 - Present.

Member of Visiting Committee for Department of Energy and Environment of Brookhaven National Laboratory of Associated Universities, Inc. - 1979 - Present.

Member of Air & Water Quality Technical Advisory Committee of Pennsylvania's Department of Environmental Resources, 1979 - Present.

Member of National Academy of Sciences' Subcommittee on the Geochemical Environment in Relation to Health and Disease of the U. S. National Committee for Geochemistry, 1979 - Present.

Chairman of National Academy of Sciences' Section on Population Biology, Evolution, and Ecology, 1980 - Present.

Other Activities:

Trustee of Henry Foundation, Gladwyne, Pennsylvania.
Trustee of Lacawac Sanctuary Foundation.
Member of Board of Directors, Wissahickon Valley Watershed Association.
Member of Advisory Council, French and Pickering Creeks Conservation Trust.
Member of Board of Directors, Greater Philadelphia Partnership.
Member of Board of Trustees, Saint Augustine's College, Raleigh, N.C.
Member of Board of Directors, Energy Research Institute, Columbia, S.C.
Member of Board of Trustees, Midwest Research Institute, Kansas City, MO.
Member of Board of Trustees, The Institute of Ecology.

American
Academy of
Pediatrics

South Carolina Chapter
P.O. Box 11188
3325 Medical Park Road
Columbia, S.C. 29211
803/252-6311

EXECUTIVE COMMITTEE
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Arno R. Hohn, M.D.
Charleston
803/792-3291

Alternate Chairman
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Charles A. James, M.D.
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Members-at-Large
Samuel R. Moorhead, M.D.
Anderson

Hal C. Anderson, M.D.
Rock Hill

Immediate Past Chairman
David C. McLean, M.D.
Florence

Dept. of Pediatrics
Interim Chairman
MUSC, Charleston
Charles P. Darby, M.D.

Dept. of Pediatrics
USC School of Medicine
Columbia
C. Warren Derrick, M.D.

Enclosure No. 20

STATEMENT OF CONCERN
ON
L-REACTOR OPERATION
IN
SOUTH CAROLINA

The South Carolina Chapter of the American Academy of Pediatrics represents the interests of all pediatricians in South Carolina. As a Chapter of the American Academy of pediatricians, we are charged with and have endorsed national objectives and priorities for children's health. One of these major goals of the Academy is the promotion and protection of children's health needs and rights within the United States.

In the spirit and intent of national health planning, the American Academy of Pediatrics has established ten primary health goals to serve our children's needs. Within these ten goals are the following two pertinent objectives which are firmly supported by South Carolina pediatricians:

1. All children should live in a safe environment.
2. All children should live in an environment that is as free as possible from contaminants.

In August, 1982, the South Carolina Chapter discussed this state's central position of radiation exposure through nuclear reactors and nuclear wastes. The following statement was adopted for our initial response to these concerns:

> As physicians charged with the responsibility of health care for children in our state, we are concerned about the immediate and long-range hazards of nuclear wastes and nuclear reactors.
>
> We offer our medical expertise and interests to governmental representatives making vital decisions on nuclear activity in South Carolina.
>
> We urge our representatives to exercise extreme care and caution in reaching these decisions, and to keep our Chapter informed of the deliberative process for future decisions on nuclear activities so that we can participate appropriately as interested citizens and professionals.

At this point in time, South Carolina's pediatricians have not been asked by government to be an official part of the imminent decisions on the L-reactor in our state. As health experts involved in assuring the health of children and trained in the biologic processes of illness and health, we believe this is an unfortunate oversight. Nevertheless, we welcome this opportunity to be a part of a public meeting for the purpose of hearing all concerns.

American Academy of Pediatrics

South Carolina Chapter
P.O. Box 11188
3325 Medical Park Road
Columbia, S.C. 29211
803/252-6311

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Charles P. Darby, M.D.

Dept. of Pediatrics
USC School of Medicine
Columbia
C. Warren Derrick, M.D.

Many speakers will state and have stated that the L-reactor decision is a moral, economic, and/or political issue. As pediatricians, we believe it can be all these, but is primarily, and preeminently, a biologic and health issue.

The effects of radiation on human beings and all forms of organic life represent unique and devastating environmental hazards unlike any other environmental risk because of radiation's universal effects on all forms of life, its fundamental risk to our genetic heritage, and its biological persistance in our environment beyond centuries of time.

Children are uniquely threatened by this form of environmental hazard. Their vulnerability occurs because of their biologic immaturity, their sensitivity of cellular elements, and the potential for long periods of exposure amounting to three and four times the potential exposures of present adults.

The L-reactor could establish another source of toxic radiation in South Carolina and pose a potential environmental hazard to adults and children. Under normal operations, radioactive cesium will be discharged into our waters as is well known. The South Carolina children exposed to these radioactive particles will absorb an increased amount of unnecessary radiation which could acutely affect some of their organic substance and chronicly expose them to repeated risks of organic change. The risk of an abnormal operation is even more threatening in that tremendous amounts of radiation can be released into our air and water because of the unfortunate structural status of the present reactor.

The South Carolina Chapter of the American Academy of Pediatrics concludes that the establishment of further radiation hazards in South Carolina is not in the biologic or health interests of her children. We believe this fact is apparent by available evidence on the effects of radiation and our children's vulnerability. However, if other priorities are now thought to out-weigh this primary consideration of our children's health, we firmly support the need to assess publicly these values in a formal environmental impact statement. We believe that statement must involve South Carolina's biologic and health experts. The South Carolina Chapter of the American Academy of Pediatrics welcomes the opportunity to be a part of this evaluation if the request to not establish the L-reactor here is denied.

Approved at Executive Committee
January 16, 1983

Arno R. Hohn, MD
Chairman
South Carolina Chapter,
American Academy of Pediatrics

Enclosure No. 21

TESTIMONY BEFORE THE SENATE ARMED SERVICES COMMITTEE ON THE L-REACTOR

By Lauri Rowe
PHYSICIANS FOR SOCIAL RESPONSIBILITY/SOUTH CAROLINA
February 9, 1983

Today it is an accepted medical fact that radiation causes cancer. According to various medical textbooks, there is no "safe" level or "threshold" below which radiation is harmless. The Environmental Protection Agency writes: "It is generally accepted that no threshold can be assumed for health effects due to radiation exposure; therefore, the perspective that must govern discharges of these materials to the environment is that all doses which accrue to exposed populations result in some increment of risk to these populations... By virtue of the long persistence of these materials these consequences may extend over many generations and, in this respect, these discharges can represent irreversible public health commitments."[1]

The mechanism by which radiation causes cancer is not completely understood. Nevertheless, the nuclear industry and government regulatory agencies have established what they claim to be "safe" doses for workers and the general public, drawing support from scientists who believe that there is a threshold below which low doses of ionizing radiation may in fact be harmless.[2] Today's so-called "safety standards" have already been proven to be dangerously high.

For example: in a study conducted by Dr. Thomas Mancuso from 1964-1976, comparatively high rates of cancer were found among workers at the nuclear weapons and waste facilities in Hanford, Washington. Over a twelve year period, Dr. Mancuso found that there was a 26% increase in all cancers among this population.[3] This worked out to be a 6-7% increase in radiation-related cancer deaths among Hanford workers, indicating that the disease is definitely related to radiation exposure at today's "acceptable" levels.[4]

Why, again, is there no "safe" level of radiation? Because all it takes is one radioactive atom, one cell and one gene to initiate a cancer. So any exposure to any dose of radiation is taking a gamble with life.

An analysis of the fuel chain of nuclear power and weapons production reveals health hazards at each step, from mining to waste disposal. The Savannah River Plant facilities include three operating reactors, all built without containment domes in the 1950's - and now it is proposes to restart the fourth, the L-Reactor, something which has never been done before in the United States.

Citizens of South Carolina and Georgia are assured that all "releases" will not lead to exposures over some accepted "limits". We're told that 46 curies of cesium will be sufficiently diluted not to create a health hazard and that routine large tritium releases are nothing to worry about. How can all of these figures, claims and counter-claims, be interpreted to the public concerned about their health, their children's health, and the health of future generations? How can physicians explain to patients the risks they face? How is it that we are supposed to understand the threat of cancer and other radiation-induced diseases when scientists are not even sure of the risk brought on by exposure to low levels of radiation?

The radiation from nuclearpower and weapons production plants is not the same as radiation from any medical source such a X-rays. Radiation from the nuclear industry regularly involves release of alpha and beta particles.[5] A medical X-ray affects a single individual, after a physician has judged that the benefit to the individual exposed will outweigh the risk; a nuclear plant exposes a population to radiation daily - added to background radiation which also takes a toll - without such an individualized judgement.[6]

It is known in the medical field that some populations are more susceptible to the risks of radiation exposure (i.e., infants and pregnant women) and yet radiation released from a nuclear plant spares no one.

Lastly, we come to the fact that most individuals choose to seek a physician's advice and they also choose to follow or not follow the physician's recommendation for an X-ray. Has anyone chosen to expose themselves to radiation from the Savannah River Plant? Do people downstream from that plant choose to consume fish which concentrate cesium, for example, up to 3000 times the amount that is found in the water?

It is certain that an Environmental Impact Statement will not give a final answer to all of the unresolved questions about radiation. But it does not serve the public interest well to dismiss such questions as unimportant, as has been done by Department of Energy officials. We, the public who will be affected by this restart of an old reactor, deserve better.

1. EPA-520/4-72-002
2. Nuclear Madness: What Can You Do!, Helen Caldicott.
3. "Radiation: the Human Cost", Nuclear Weapons Facilities Project.
4. Caldicott.
5. Health Effects of Nuclear Power and Nuclear Weapons, Physicians for Social Responsibility, Katherine L. Kahn, M. D.
6. Kahn.

Enclosure No. 22

Comments to Armed Services Committee Concerning L-Reactor Re-start

Senator Thurmond, Distinguished Members of the Armed Services Committee:

First, I want to thank you for the opportunity to appear before you today representing, I feel, the overwhelming majority of the people in our area who favor the early re-start of the "L" Reactor.

I am Odell Weeks, Mayor of the City of Aiken. I was Mayor when the first announcement was made that the Savannah River Plant was to locate in this area. Except for 2 years in the mid-fifties I have had the honor of serving the citizens of Aiken since that time, and I assure you it is indeed an honor.

Why do I, along with the overwhelming majority of our Council, favor the early re-start up of "L" Reactor?

First of all, we have heard from our citizenry with telephone calls and personal approach that they feel we need to "get on" with this re-start to insure the defense of this great country in which you and I have the privilege to live and serve.

Secondly, we have the utmost confidence in the people that operate the Savannah River Plant--The DuPont Company and the Department of Energy which supervises these operations.

These people live, work and serve among us and with us. They have been doing this for 30 years. No matter how high the monetary rewards, would you work in a location that you felt was detrimental to your health and that of your families and your friends? I'm sure your answer is NO. Certainly none of these personnel would. Nor do I believe the DuPont Company with its outstanding corporate image to protect would engage in any operation that could endanger the health of its employees or the community.

The opponents say to us--You're only interested in it for the jobs that it provides and the money that it brings to the community. If I said to you that was not a consideration, you would know that I was not being honest. I guess we could live without the Savannah River Project, but it would be most difficult.

That is not my prime purpose of being here today. It is one of belief and commitment.

Belief in our elected officials in Washington and appointed people in places of leadership. These people tell us we need the re-start of the "L" Reactor for national defense.

Belief in the DuPont personnel and the Department of Energy personnel that have operated the Savannah River Plant as one of the safest industrial operations in the nation for 30 years.

Belief in the information provided by the independent engineering consulting firm of NUS who has made a comprehensive environmental assessment that there would be NO significant environmental impact by the re-start of the "L" Reactor. I can see no benefit to be gained by delaying the re-start of the "L" Reactor for further expenditure of taxpayer funds and the delay of meeting the national defense needs by requiring a further Environmental Impact Statement.

Our commitment is to do whatever possible to convey to you and the nation our positive feelings concerning the Savannah River Plant, the DuPont Company, and the Department of Energy operation.

I close with these thoughts.

There's no one that lives closer to the situation than we do.

There's no one that has a deeper confidence and faith in the operation at SRP than we.

There is no one that has more to lose than we. We don't live in New York, California, or Japan. We are the neighbors.

I submit to you--Do you think I would be here today representing the people of my community--a community and its people that I love dearly--if I thought this was in any way detrimental to us.

As a layman I say to you, after personal observation and study in trying to inform myself about this matter, let's proceed on schedule with the re-start of the "L" Reactor.

February 9, 1983

AIKEN
SOUTH CAROLINA

City of Aiken
South Carolina

H. O. Weeks
Mayor

Telephone 648-9566

January 25, 1983

The Honorable Strom Thurmond
Chairman, Armed Services Committee
209 Russell Building
Washington, DC 20510

Attention: Mr. Jim Smith

Dear Senator Thurmond:

The attached resolution adopted by City Council at its regular meeting on January 24, 1983, expresses some of the concern felt by the members of the City Council of Aiken over the proposal to delay start up of the L-Reactor at the Savannah River Plant. I believe it represents the view of an overwhelming majority of our citizens including realtors and other segments of the business community of Aiken.

My association with the Savannah River Plant goes back to the early days of the facility including the announcement that the Savannah River Plant was going to locate here. During most of this time I have served as Mayor of the City of Aiken and have had the experience of working with the people who operate the Savannah River Plant including the DuPont personnel and the Department of Energy personnel. This experience has served only to increase my confidence in the competence of the operating organization and its overriding commitment to protect the safety of employees, the public and the environment.

Most of the personnel who have worked at the plant have chosen Aiken as their retirement home. Also Aiken has become a very popular place for retirement for persons from all parts of the United States. This influx of new people continues today. I feel that if they were so upset about the environment in relationship to the Savannah River Plant that they would not have chosen Aiken as their retirement home.

Also, as the resolution states I think it is very significant that the L-Reactor was operated without adverse affect for approximately fifteen years. From all the studies that I have done from the information available, it appears to me that the development now being carried out in the area further reduces any chance for adverse environmental impact.

We respectfully urge that the Armed Services Committee reject the proposal for delay of the restart of L-Area Reactor.

I also respectfully request that this be made a part of the public hearing on February 9 and that I be allowed to present this to the committee.

Sincerely,

H. O. Weeks
Mayor

HOW/sr

Enclosure

City of Aiken

South Carolina

Post Office Box 1177

RESOLUTION
of
Aiken City Council
on
Restart of L-Reactor at the Savannah River Plant
January 24, 1983

WHEREAS, The Department of Defense and the Federal Government have determined that the restart of L-Reactor is vital to our national defense and a major delay in restart could endanger our nation's security, and

WHEREAS, the L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968, and

WHEREAS, The DuPont Company in conjunction with the Department of Energy has operated the Savannah River Plant including three other Reactors in a safe and efficient manner, and the citizens of our area have the utmost confidence in the DuPont Company and the Department of Energy's operation of the Savannah River Plant including the restart of L-Reactor.

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Aiken urges all agencies both state and national to reach a prompt agreement so that the restart of L-Reactor will not be delayed beyond the scheduled startup date.

H. O. Weeks
Mayor

Hastings Wyman
Councilman

William H. Hester Jr.
Councilman

Crampton H. Dreher
Councilman

Councilman

Robert A. Perry Jr.
Councilman

Councilman

ATTEST: J. M. Anderson Jr.
City Clerk

Sponsored by Council Members Cullinan, Hill, Woodring, Hatcher
Warner, McElhaney, Toole

RESOLUTION No. 83-1-20

COUNCIL ADMINISTRATOR FORM OF GOVERNMENT FOR AIKEN COUNTY

(Restart of L-reactor at Savannah River Plant)

WHEREAS:

1. The present and past National Administration considers the restart of the L-reactor as vital to the defense of this country, and
2. A major delay in the restart of L-reactor could endanger our national security, and
3. L-reactor operated safely from its initial start-up in 1956 until it was shutdown and placed on standby in 1968, and
4. The impact of L-reactor operations on the streams of the Savannah River Plant and on the Savannah River has been demonstrated and the consequences are known to have had negligible effects on human health and safety and has inflicted no permanent damage to the environment.

NOW THEREFORE BE IT RESOLVED BY THE AIKEN COUNTY COUNCIL that the various governmental offices and agencies be urged to reach prompt agreement so that the restart of L-reactor will not be delayed beyond its scheduled date. Also, that a copy of this resolution be forwarded to the Chairman of Armed Services Committee with the request for permission to present this resolution at the hearing to be held in North Augusta, South Carolina on February 9, 1983.

Adopted at the Regular Meeting of Aiken County Council on January 18, 1983.

SIGNED:

Carrol H Warner

Carrol H. Warner, Chairman

ATTEST:

Doris G. Shulse

Doris G. Shulse, Council Clerk

Council Vote: Affirmative: Cullinan
Hatcher, Hill, Warner,
Woodring, McElhaney
Abstain: Toole
Absent: Clyburn, Smith

Enclosure No. 23

T. E. RICHARDSON
CHAIRMAN
D. M. NORWOOD, JR.

BARNWELL COUNTY COUNCIL

R. O. COLLINS
W. W. MOORE
G. L. INABINET

P. O. BOX 443
BARNWELL, S. C. 29812

(803) [illegible]

February 9, 1983

STATEMENT BY T. E. RICHARDSON AT THE HEARING OF THE U.S. ARMED SERVICES COMMITTEE

Gentlemen:

I come this morning to speak in support of the restarting of the L-Reactor at the Savannah River Plant. The technical aspect of this project will be left to others since I am not qualified in this field.

I am a life-long resident of Barnwell County and have been on the County Council for some 16 years. I remember very well the original announcement of this project coming to our area. It was received with both excitement and enthusiasm by some and apprehension by others. Very few people really knew what to expect, however, over the years a great number of our relatives and friends obtained employment in this plant and it also brought others to our area.

With their safety record and no unusual incidents occurring over the years the great majority of the people in our area have accepted this plant and have the utmost confidence in the many safeguards that have been taken to be sure that our people and environment are protected. I feel confident that the restarting of the L-Reactor at this time will be given very thorough consideration from every view point, including the protection of the people and also the protection of the environment. From the experience that I have had with this plant, if they thought it would not be possible to do this they would not propose the restarting of this reactor.

I hope that you will give your support of this project if it is needed for the strengthening and betterment of our country.

I have with me Mr. Jim Benson, Superintendent of the Barnwell School to give his support to this project. If you have any questions, he or I will be glad to answer them.

One final thing - I do feel that it is time, in fact past time, that Congress take the necessary action for the permanent disposal of the high level waste at the Savannah River Plant. It is a problem that is certainly not going away and the sooner a decision is made the better off we will all be.

E. RICHARDSON
CHAIRMAN
M. NORWOOD, JR.

BARNWELL COUNTY COUNCIL
P. O. BOX 442
BARNWELL, S. C. 29812
(803) 259-3464

R. O. COLL
W. W. MOO
G. L. INAB

RESOLUTION

of

Barnwell County Council

on

Restart of L-Reactor at the Savannah River Plant

February 1, 1983

WHEREAS, The Department of Defense and the Federal Government have determined that the restart of L-Reactor is vital to our national defense and a major delay in restart could endanger our nation's security, and

WHEREAS, the L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968, and,

WHEREAS, The DuPont Company in conjunction with the Department of Energy has operated the Savannah River Plant including three other Reactors in a safe and efficient manner, and the citizens of our area have the utmost confidence in the DuPont Company and the Department of Energy's operation of the Savannah River Plant including the restart of L-Reactor.

NOW, THEREFORE, BE IT RESOLVED, that the County Council of the County of Barnwell urges all agencies, both state and national to reach a prompt agreement so that the restart of L-Reactor will not be delayed beyond the scheduled startup date.

J. E. Richardson
County Council Chairman

Councilman

W. W. Moore
Councilman

Councilman

Councilman

ATTEST:
County Clerk

Enclosure No. 24

To: Members of the U.S. Senate
Armed Services Committee
L Reactor Hearing

February 9, 1983
North Augusta, S.C.

From: Joe Wilder
Barnwell, SC

Senator Thurmond, members of the committee. I am Vice-Chairman of the South Carolina Advisory Commission on Intergovernmental Relations, and a member of the board of directors of the South Carolina Energy Forum. However, I am not here representing those distinguished groups. I am here today as a private citizen and owner of radio stations in Barnwell and Hampton Counties. I am a 30 year resident of Barnwell and active in its community affairs.

Before I address the subject of this hearing permit me a few moments to review the role of Barnwell County in the development of nuclear energy.

Barnwell County is the principal repository of low level commercial waste. We continue to be vilified in certain quarters for not objecting to this on going situation. We do believe that other areas of the country, through regional compacts, should accept responsibility in disposing of their own waste materials. On the positive side, Barnwell County deserves a great deal of credit, by its acceptance of low level commercial waste, for the development of nuclear medicine, research and the development of the nuclear power industry in this country.

Barnwell County is also the site of the Barnwell Nuclear Fuel Plant. This $350 million dollar reprocessing plant has been idle since its near completion in the mid 1970's. In Barnwell County we consider it a potential national resource.

We cannot understand why commercial spent fuel rods must be buried when they could be reprocessed, salvaging the valuable uranium and plutonium, and at the same time reducing the waste by 90%.

The government and private industry must form a partnership to develope this facility and time is running out.

Two-thirds of the Savannah River Plant is located on what was original Barnwell County soil. Some 32 years ago our people lost their land and had their lives changed, forever.

These same people have supported the defense rolp of this huge plant throughout the years. We have been good neighbors.

The Savannah River Plant operators, the Dupont Company and the Department of Energy and its predecoesors have been open, as possible, in keeping our citizens informed.

Their deep enviromental concerns have been demonstrated, for over 3 Decades by continuous impact studies in all phases of the plant operation. A trust has developed that cannot easily be shaken.

Now Anti-nuclear groups under the guise of environmentalist continue to have a knee-jerk response to any nuclear development. They have enlisted the state of South Carolina in their fight to stop the re-opening of the L reactor.

Government leaders must take a stand for safe and sane nuclear development, commercial or military. Certainly public response should be sought, but common sense must prevail.

The state of South Carolina may have a right and duty to question federal authority. However, it should not accept unreasonable fear as fact or ignore the mountain of studies and documents that prove, in my judgement, the negligible impact of the L reactor on Barnwell County and the Savannah River. Thank You.

Enclosure No. 25

EDGEFIELD
COUNTY COUNCIL
P.O. BOX 663
EDGEFIELD, S.C. 29824
215 JETER ST.
(803) 637-5381

COUNTY COUNCIL
CHARLES E. LYBRAND
Chairman
EUGENE G. HUIET, SR
Vice-Chairman
HENRY M. HERLONG, JR
WILLIAM H. McBRIDE
J. BLAND WILLIAMS

January 27, 1983

Senator Strom Thurmond
Senate Office Building
Washington, D.C. 20510

Dear Senator Thurmond:

During the hearings you and Senator Mattingly plan to hold in North Augusta, S. C., on February 9, 1983, the Edgefield County Council wishes you to consider the resolution passed unanimously on January 27, 1983 in support of the restart of L-Reactor at the Savannah River Plant.

The council members have noted in the press the related comments by various groups throughout the state, as well as by some of the leadership in state government. The council wishes you to consider our collective views as the elected governing body of Edgefield County.

A copy of our resolution on restart of L-Reactor is attached.

Sincerely,

Charles E. Lybrand
Chairman

CEL/bs

encl.

At present, ninety (90) Edgefield County employees are gainfully employed at the Savannah River Plant. We are grateful for this, with the economy being at a record low. The Edgefield County Council feels that the restart and operation of the L-Reactor will create additional jobs for the residents of our county and this section of South Carolina.

STATE OF SOUTH CAROLINA)
COUNTY OF EDGEFIELD)

RESOLUTION

WHEREAS, Be it known that the restart of L-Reactor is vital to the national defense and a major delay in restart could endanger our nation's security, and

WHEREAS, Be it known that L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968, and

WHEREAS, Be it known that the impact of L-Reactor operations on the streams of the Savannah River Plant and on the Savannah River has been demonstrated and the consequences are known to have had negligible effects on human health and safety and had inflicted no permanent damage to the environment.

NOW, THEREFORE, BE IT KNOWN that the Edgefield County Council urges the various governmental offices and agencies to reach prompt agreement so that the restart of L-Reactor will not be delayed beyond its scheduled date.

This Resolution duly adopted the 27th day of January, 1983.

Charles E. Lybrand
CHARLES E. LYBRAND, CHAIRMAN
EDGEFIELD COUNTY COUNCIL

ATTEST:

H O Carter
H. O. CARTER, CLERK TO COUNCIL

Enclosure No. 26

ROBERT H. McKIE
MAYOR
CHARLOTTE COLEMAN
CLERK AND TREASURER
JOHN W. PETTIGREW
MAYOR PRO TEM
GREG W. ANDERSON
ATTORNEY

COUNCILMEN
KENNETH M. PEELER
WILLIAM COLEMAN
CHARLES BENFIELD
CHAS. T. MATHIS
JOHN W. PETTIGREW
JOHN ELLIS

January 27, 1983

Senator Strom Thurmond
Senate Office Building
Washington, DC. 20510

Dear Senator Thurmond:

During the hearings you and Senator Mattingly plan to hold in North Augusta, S.C., on February 9, 1983, the Edgefield Town Council wishes you to consider the resolution passed unanimously on January 23, 1983, in support of the restart of L-Reactor at the Savannah River Plant. The council members have noted in the press the related comments by various groups throughout the State as well as by some of the leadership in State Government. The Council wishes you to consider our collective views as the elected governing body of The Town of Edgefield. A copy of our resolution on restart of L-Reactor is attached.

Very sincerely yours,

Robert H. McKie
Robert H. McKie
Mayor

RHM/rem
Attached

P.S. We have 90 people from Edgefield County employed at this plant; 31 of live in Edgefield. I have talked to many of these people and am convinced the re-star is safe and proper for many reasons.

Love to the family, Bob McKie

AREA CODE 803-637-3935 P.O. BOX 390 EDGEFIELD SOUTH CAROLINA 2

Attached

RESOLUTION OF EDGEFIELD TOWN COUNCIL

ON

RESTART OF L-REACTOR AT THE SAVANNAH RIVER PLANT

PASSED ON JANUARY 26, 1983

Be it known that the restart of L-Reactor is vital to the national defense and a major delay in restart could endanger our nation's security.

Be it known that L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968.

Be it known that the impact of L-Reactor operations on the streams of the Savannah River Plant and on the Savannah River has been demonstrated and the consequences are known to have had negligible effects on human health and safety and had inflicted no permanent damage to the environment.

Therefore

Be it known that the Edgefield Town Council urges the various governmental offices and agencies to reach prompt agreement so that the restart of L-Reactor will not be delayed beyond its scheduled date.

January 26, 1983

Robert H. McKie

Robert H. McKie
Mayor

Enclosure No. 27

TESTIMONY by LEAGUE OF WOMEN VOTERS OF SOUTH CAROLINA
before SENATE ARMED SERVICES COMMITTEE
February 9, 1983
North Augusta, GA

I am Mary T. Kelly, Vice-President and Natural Resources Coordinator for the League of Women Voters of South Carolina. We thank you for the opportunity to offer this testimony today.

The League of Women Voters is a volunteer citizens organization with almost 1000 members in South Carolina organized in local Leagues throughout the state, including areas very directly impacted by the environmental consequences of the L-Reactor restart, namely Aiken, Beaufort and Hilton Head. We are committed to an open governmental system that is representative, accountable and responsive to all citizens. At all levels we have an active environmental program, encompassing air and water quality, energy, and nuclear issues.

In South Carolina, the League has an on-going study and informational effort on nuclear matters because we recognize the barriers to participation that exist when complex technical matters must be considered. As a result, League members have a relatively high degree of understanding of the issues involved in the L-Reactor restart. We are parties to the suit filed by the Natural Resources Defense Council to force the Department of Energy to prepare an Environmental Impact Statement before the L-Reactor is rebuilt or reactivated.

We think DOE should prepare an Environmental Impact Statement because we share Senator Mattingly's opinion that the present study is inadequate. A comprehensive EIS needs to be prepared, addressing "all current and projected government and private nuclear facilities" in the area. Knowledgeable South Carolinians have long been concerned that the Savannah River Plant was sited back in the 50's, not because the area is most environmentally suitable but because it presented the path of least political resistance. As citizen understanding has grown, so have concerns about the location of such a facility in an area of high rainfall, on top of a major aquifer affecting a multi-state area, in a Class 3 seismic zone, and on a river used by many South Carolina and Georgia towns as a drinking water source.

Because the Savannah River Plant was built before passage of the National Environmental Policy Act in 1969, no comprehensive environmental study has ever been done for any of the reactors at SRP or for the facility as a whole. We contend that rebuilding the L-Reactor is a major federal action and as such, federal law requires preparation of such a statement. Not only do impacts on the physical environment need to be addressed but impacts on human health and safety.

The major importance of an EIS, in our opinion, is that there will be input from outside sources. State agencies and outside groups should be able to obtain and review relevant data independently and have meaningful input into the decision-making process. There is serious and valid criticism on the part of the Environmental Policy Institute, among others, concerning lack of access to data necessary for base line epidemiological studies on Savannah River Plant workers and the population of surrounding areas. In South Carolina, where the second leading cause of death is cancer, the cancer death rate is increasing at an alarming rate. For the United States as a whole, the age-adjusted death rate, according to information released by the Governor's office, is 3.1%. For South Carolina the age-adjusted cancer death rate increase is 9.2%. Is it any wonder citizens want the health impact of the Savannah River Plant examined in depth? A comprehensive epidemiological study is long overdue, with input and review by agencies and individuals who cannot be accused of conflict of interest. It is unacceptable for DOE, as contractor for Savannah River, to also act as the public health agency doing and evaluating the epidemiological study.

We share the concerns of the League of Women Voters of Georgia and of others over the effects of the generation of large volumns of superheated water on the ecosystem, the flushing out of radioactive cesium now deposited in the containment pond sediment near the L-Reactor and the possible consequences to those who drink Savannah River water and eat its fish. We are further concerned about accidental or intentional release of radiation, from a reactor without a containment dome. The fact that reactors which produce defense materials do not have to meet the more stringent standards set by the Nuclear Regulatory Commission for commercial reactors provides the reason for this omission but not the justification. We in South Carolina and Georgia should expect and receive the fullest measure of protection from our federal government.

We know that major new facilities are planned for the Savannah River Plant as the nation proceeds with its defense build-up. Since no major, comprehensive study addressing health and safety and other environmental questions has ever been done for the reactors at Savannah River, we join with the State of South Carolina, the Beaufort-Jasper Water Authority, Senators Hollings and Mattingly, the League of Women Voters of Georgia and others in requesting that an Environmental Impact Statement be prepared. We are convinced that even if the decision is made to proceed with the L-Reactor, modifications will be made which will make the operation safer, that important epidemiological information will be developed and some measure of public confidence will be restored.

Again, we thank you for this opportunity to be heard.

Enclosure No. 28

TESTIMONY
by
LEAGUE OF WOMEN VOTERS of NORTHERN BEAUFORT COUNTY
before
SENATE ARMED SERVICES COMMITTEE
February 9, 1983
North Augusta, SC

My name is Zoe Tsagos. I am a member of the League of Women Voters of Northern Beaufort County and hold the position of Energy Chair. We thank you for the opportunity to present this testimony.

Our League, since its inception in 1973, has been involved in the study of energy generation, nuclear power and nuclear waste storage. We have held public meetings on these subjects.

Because of our concern about what the impact may be, both on the water quality and the environment of a reactivated L-reactor in the Savannah River Plant according to present plans, we have joined with other organizations and governments in the suit brought by the Natural Resources Defense Council against the Department of Energy. We feel that before more costs are incurred in the rehabilitation of the reactor, it is necessary that an ENVIRONMENTAL IMPACT STATEMENT be prepared. We agree with Senator Mattingly that the Environmental Assessment study put out by DOE is inadequate.

We who are residents of Jasper and Beaufort Counties of South Carolina, who use the Savannah River as the source of drinking water, have a particular concern about the release of radioactive waste into the river. We wish to stress the following:

1- The proposed method of reactivating will place a nuclear reactor in operation without a protective containment dome, without cooling pools and without the use of the most recent techniques for the solidification and retrieval of radioactive isotopes instead of flushing them into the Savannah River.

2- Reference is most frquently made of cesium as part of radioactive waste because we know that it is now present in the sediment of the containment pond. However, on pages 4-38 and 4-39 of the DOE Environmental Assessment there are lists of other radioisotopes and radionuclides that will be released into the water as well when the L-reactor is on stream. Iodine is one of the isotopes. It is my understanding that the impact of the radioactive iodine upon the thyroid resulted in thyroidectomies for children in certain areas of atomic testing.

3- On page 4-39 of the Environmental Assessment we find the following: "The total-body dose to the population within 80 Kilometers of the Savannah River Plant from liquid effluents from the L-reactor support facilities was calculated to be about 0.1 man-rem per year; the thyroid dose was also about 0.1 man-rem per year." However, "The total-body dose to the Port Wentworth and Beaufort-Jasper populations (about 70,000 people) from drinking Savannah River water was calculated to be about 1.3 man-rem per year; the maximum organ dose to this population was 2.5 man-rem per year to the thyroid." Obviously we cannot be comfortable with the differential indicated by these statistics.

2- The impact upon the environment of the releasing of radioactive waste can become cumulative and have much wider range~~s~~ of contamination than presently indicated.

This contamination of the physical environment can come about by radical changes in the eco-system as radioactive waste becomes embedded in the sediment and accumulates in the river. This can be compared to what is happening in the Chesapeake Bay, which, because of toxic waste which has been draining into the water, ~~is seeing~~ the life cycle in the eco-system, being destroyed and the water is growing less able to sustain living organisms.

3- The National Environmental Policy Act of 1969 calls for an EIS whenever a "significant" impact upon the environment will be made by Federal atomic installations. Therefore the non-issuance of an EIS, we feel, is in violation of Federal Legislation.

From what has already been stated, we consider that the reactivating of the L-reactor under the present plan will indeed have a significant impact upon the natural environment and upon the lives of the 70,000 users of the Savannah River for drinking water.

In conclusion, we take the position that an EIS, with citizen input as well as that of expert opinion, would help to answer some of the questions in the minds of people concerned in South Carolina and Georgia. Furthermore, a safer activated reactor may well be the outcome of this wider consideration and study.

On behalf of the League of Women Voters of Northern Beaufort County I thank you for your consideration in hearing this testimony.

Enclosure No. 29

RESOLUTION

WHEREAS, the Department of Defense and the Federal Government have determined that the restart of L-Reactor is vital to our national defense, and a major delay in restart could endanger our nation's security; and

WHEREAS, the L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968; and

WHEREAS, the Savannah River Plant has operated in a safe and efficient manner, and the citizens of our area have the utmost confidence in the operation of the Savannah River Plant, including the restart of L-Reactor.

NOW THEREFORE BE IT RESOLVED that the City Council of Augusta, Georgia, urges all agencies, both State and National, to reach a prompt agreement so that the restart of L-Reactor will not be delayed beyond the scheduled startup date.

DONE IN OPEN COUNCIL UNDER THE COMMON SEAL THEREOF, this 31st. day of January 1983.

MAYOR, CITY OF AUGUSTA

ATTEST:

CLERK OF COUNCIL

Enclosure No. 30

STATEMENT
OF
DR. THOMAS B. COCHRAN
AND
S. JACOB SCHERR, ESQ.
ON BEHALF OF THE
NATURAL RESOURCES DEFENSE COUNCIL
TO THE
ARMED SERVICES COMMITTEE
UNITED STATES SENATE
REGARDING THE
ENVIRONMENTAL CONSEQUENCES OF THE L-REACTOR PROJECT

NORTH AUGUSTA, S.C.
FEBRUARY 9, 1982

We are Dr. Thomas B. Cochran, Senior Staff Scientist, and S. Jacob Scherr, Senior Staff Attorney, with the Natural Resources Defense Council, Inc. We are pleased to have this opportunity to present testimony, on behalf of NRDC, to the Committee regarding the environmental consequences of the L-Reactor Project.

NRDC is a national non-profit environmental protection organization with over 32,000 members. NRDC's staff undertakes advocacy, policy analysis, and public education on a wide range of environmental issues, including clean air, clean water, forestry, public lands, toxic chemicals, and the international environment. For over a decade NRDC has been actively concerned about the hazards posed by the nuclear activities of the Federal Government, particularly those related to radioactive waste management and radiation exposures. NRDC has been involved in numerous legal and administrative proceedings and testified frequently before Congress to assure that Federal Government nuclear activities do not endanger health and the environment, do not evade public scrutiny, and otherwise do not fail to comply with the law.

Of NRDC's national membership, over 250 live in South Carolina and Georgia. Over 40 NRDC members live within forty miles of the Savannah River Plant (SRP), which is the site of the L-Reactor. NRDC members use the Savannah River downstream from SRP for many purposes, including drinking water, fishing, and recreation.

In regard to the L-Reactor Project, we reviewed the Environment Assessment (EA) released by DOE last August at the request of concerned citizens in the region. On October 8, 1982, NRDC, the Energy Research Foundation of Columbia, S.C., and the Environmental Policy Institute wrote to DOE to request a reconsideration of the decision not to prepare an Environmental Impact Statement (EIS). A month later, these three groups, along with the League of Women Voters of South Carolina; League of Women Voters of Northern Beaufort County, S.C.; The Georgia Conservancy; League of Women Voters of Georgia; League of Women Voters of Savannah-Chatham, Ga.; Coastal Citizens for Clean Energy, Savannah, Georgia; and three individuals living near SRP filed a lawsuit in the U.S. District Court to compel DOE to comply with the National Environmental Policy Act.

Over the last six months, the L-Reactor Project has become increasingly controversial. In mid-December, the Budget and Control Board of the State of South Carolina acted on the recommendations of Governor Riley's Executive Task Force on the L-Reactor and passed unanimously a resolution (1) to require governmental nuclear actions to meet the same standards as would be required of actions of private industry and (2) to direct that steps be taken to assure that all State and Federal regulatory and permitting procedures are met. In January 1983, Governor Riley called for the preparation of an EIS on the L-Reactor and the State of South Carolina joined our lawsuit as a plaintiff.

The Savannah River region has changed dramatically since November 1950 when the site of DOE's Savannah River Plant (SRP) was chosen. The site was considered to be attractive then because of its "remote location", a low population density, and the accessibility of a large cooling-water supply. Since that time, South Carolina and Georgia have been among the fastest growing states in this nation. Some 250,000 people now live within 30 miles of SRP. About 90 miles southeast of SRP, the Carolina coast between Charleston, S.C. and Savannah, Georgia has witnessed rapid development during the last decade. Atlanta, Georgia, the major metropolitan area in the region, is only 160 miles to the west. SRP sits directly above the Tuscaloosa Aquifer, which is one of the largest and most relied upon freshwater reserves in the Southeast.

There has been a corresponding growth in demand for the resources provided by the Savannah River. Downstream from SRP, the river is now a source of drinking water for some 51,000 people in Beaufort-Jasper counties and for industrial customers near Savannah, Georgia, including the Georgia Port Authority and the Coca Cola Bottling Company. There is growing concern in coastal communities regarding diminishing groundwater supplies. It is clear that the Savannah River will be looked to more and more as a source of drinking water in the future. The Savannah River and its coastal environs also support important commercial fisheries, wildlife habitat, and a variety of recreational activities.

At the same time, people in the region have become wary of the increasing concentration of nuclear facilities and radioactive wastes at and near SRP and the prospect that the area could become the nation's and perhaps the world's nuclear "dumping ground". The operation of the L-Reactor would add each year some 280,000 - 500,000 gallons of high-level radioactive wastes to the some 28 million gallons already stored at SRP. While some actions are finally being taken toward the disposal of these wastes, there remains doubt as to their ultimate disposal in a permanent facility offsite. In the last few years, people have become less willing to accept blind assurances that nuclear accidents will never happen or that increased amounts of radioactivity in our air, water, and food will have no effect on our health or that of future generations.

We commend the Armed Services Committee for calling this hearing on the environmental consequences of the L-Reactor Project. We view this hearing as an important step forward in addressing deep citizen concern about the proposed operation of the L-Reactor. In our testimony, we will set out the general health and environmental criteria which should be followed in regard to the L-Reactor. We will show that the L-Reactor does not meet the same safety requirements which are imposed on commercial nuclear reactors and that its operation will result in unnecessary radiological and thermal discharges. Finally, we will discuss DOE's failure to meet its environmental responsibilities by refusing to prepare an EIS on the L-Reactor Project.

I. The L-Reactor Should Meet the Same General Safety and Environmental Criteria To Be Applied to a New Production Reactor

It is our view that the decision to reactivate the L-Reactor must not be based on the standards of 1950's, but rather those of the 1980's. The L-Reactor was hastily constructed and placed into operation in July 1954. It was shut down fourteen years later in February 1968. For twelve years, the L-Reactor was essentially abandoned. Grass grew on the roof of the L-Reactor building, pigeons took up residence inside, and some of the outside piping was left to rust. In October 1980, DOE began work to bring the L-Reactor back to life. The Phoenix -- the mythical bird which consumed itself by fire and then rose again from its ashes -- was chosen as an appropriate symbol for this reconstruction project. It appears from DOE's schedule that most of the work on the L-Reactor will be devoted to repair and renovation, as opposed to capital improvements to the facility. This is the first time that there has been an attempt to restore an old reactor to operating condition. The restoration project, the estimated cost of which has risen from $90 million to $214 million, will result in an essentially new L-Reactor which can be expected to continue to operate into the next century.

In November 1982, a DOE expert advisory panel recommended that SRP be selected as the site of a new production reactor (NPR), which would be a higher power version of the L-Reactor. In selecting among competing reactor concepts, the NPR advisory panel set out the following general safety and environmental criteria which we believe should be applied as well to the L-Reactor:

- The L-Reactor must meet safety and environmental standards comparable to those for commercial nuclear reactors
- Radiation exposures and effluent discharges from the L-Reactor are to be kept as low as reasonably achievable.
- The L-Reactor must operate in a safe and environmentally responsible manner

II. The L-Reactor Does Not Meet Today's Safety Requirements for Nuclear Reactors

The L-Reactor is a heavy water moderated reactor designed principally to produce plutonium and tritium. It was designed to operate at thermal power levels up to about 2900 Megawatts thermal (Mw_t) and can be expected to operate at power levels between 2100 MW_t and 2600 MW_t. The L-Reactor is larger than one-fourth of the commercial nuclear power plants now operating in the U.S. By comparison, the Three Mile Island Unit No. 1 reactor is designed to operate at about 2535 MW_t.

At the outset, it is important to recognize that it is impossible to say whether a heavy water production reactor is more safe or less safe than a conventional light water power reactor (LWR). Each type has several safety advantages and disadvantages. For example, the L-Reactor would operate with the coolant near atmospheric pressure which reduces the risk of some loss of coolant accidents, but does not affect the risks of the other major class of accidents, namely those initiated by reactivity transients. The apparent advantage of reduced operating pressure is largely offset since the L-Reactor's vessel and piping are not designed to withstand high pressures, and due to their age may encounter severe stress corrosion which could result in leakage of water needed to cool the reactor's core. Such leakage, which according to a DuPont study, has occurred on at least 12 occasions at SRP reactors, raises the danger of a fuel meltdown. Under similar circumstances, the NRC would shut a reactor down until corrective measures were taken.

The L-Reactor operates close to the boiling point, providing less of a safety margin than pressurized water reactors. The inventory of strontium-90 and cesium-137 in the L-Reactor will be less than that in a comparable size LWR because the fuel burnup will be much less -- a safety plus. On the other hand, the inventories of iodine-131 and other short-lived radioiodine isotopes -- often the most worrisome isotopes in the event of an accident -- are comparable in the two reactor types.

We could continue to identify the strengths and weaknesses of each reactor type. However, such an exercise, absent any methodology for weighing the merits of each characteristic, has little value and deflects attention from the real concerns regarding the safety of the L-Reactor.

The L-Reactor has serious safety problems which are a result of the obsolescence of its safety systems and the criteria to which its systems were designed. The L-Reactor has never undergone a comprehensive licensing review which is required of every commercial power reactor in this country. Indeed, the new L-Reactor has not been the subject of any independent safety review even within DOE. The NPR advisory panel stated that one of the disadvantages of the L-Reactor type is that "it has not undergone updated safety review based on strict compliance with current safety standards." It is highly unlikely that the L-Reactor would be permitted to operate if a full safety review were required.

The most serious safety deficiency of the L-Reactor is the absence of a sealed containment structure to prevent the release of radioactive noble gases and iodine in the event of an accident. Over the last decade, not a single reactor of this size has come into operation in the U.S. without a containment dome. In the event of a full-core melt accident at the L-Reactor, the L-Reactor's entire inventory of tens of millions of curies of radioactive noble gases, such as krypton-85 and xenon-133, would be released directly into the atmosphere

DuPont's own documents reveal that the L-Reactor, lacking a sealed containment structure, could not be operated at this site under existing Nuclear Regulatory Commission criteria, 10 CFR

Part 100. These criteria set dose limits for whole-body and thyroid exposures at 25 rem and 300 rem respectively, following a specified release of radioactivity from the reactor vessel associated with a postulated substantial core meltdown. According to a DuPont study, these limits would be exceeded just from the release of noble gases alone, in weather conditions which are present at SRP approximately 30% of the time. As a result, the L-Reactor at this site would simply be judged unsuitable.

The L-Reactor relies on a partial filter system designed to trap most but not all of the highly radioactive halogens, such as radioiodine, which would also escape in the event of a core melt accident. The efficiency of this filter system, however, is severely compromised if it is not properly serviced, or if the temperature of the exhaust air (i.e. the gaseous releases from the molten core) is not cooled below 100° C. The ability of the filters to trap iodine depends upon the continued availability over several days of an operating heat removal system. Should the filters fail, millions of curies of radioiodine could be released. This confinement approach is less safe than a passive sealed containment structure.

The discussion of L-Reactor accidents in the EA is misleading and inaccurate. The EA discusses the probability and consequences of a spectrum of accidents of varying severity up to a postulated accident resulting in a 10% core melt. Yet a DuPont study analyzes the dose consequences of a much more severe full-core melt accident with simultaneously reduced effectiveness of the filter system which result in exceedingly high thyroid doses to the public. The EA does not give any consideration to these more severe accidents on the basis that the calculated probabilities of these events is less than one chance in a million per year of reactor operation. Yet this DuPont study reveals that these probability estimates exclude any consideration of multiple failures of safety systems due to a common cause. As a result, the risk of a larger meltdown is significantly higher and must be considered in assessing the safety of the L-Reactor and the health and environmental consequences of an accident.

The operation of the new L-Reactor with its cooling water discharged directly into Steel Creek would also place SRP in violation of NRC standards for radiation exposures off-site resulting from routine operations. Although not disclosed in the EA, the underlying DuPont study[1/] states that the resulting transport of cesium from Steel Creek will increase the maximally exposed offsite individual whole body dose from SRP from 2.3 mrem to 10.8 mrem/yr using NRC methodology. This latter figure is twice as high as the 5 mrem limit set by the NRC for a multireactor site, 10 CFR Part 50, Appendix I.

[1/] Environmental Information Document (EID) L-Reactor Reactivation, at p. 5-28 (DPST-81-241, April 1982).

In sum, the L-Reactor without both a sealed containment structure and an alternative cooling water system cannot meet standards comparable to those applied to nuclear power reactors.

III. The Operation of the L-Reactor Would Result in Needless Radiation Exposures and Effluent Discharges

The L-Reactor was built at a time when some radio-biologists thought that there was a threshold dose below which radiation exposures would be harmless. The Federal Government then believed that it was acceptable to release large quantities of radioactivity into the environment and to rely upon natural processes of dilution as a means of reducing the potential exposure to any individual.

The Federal Government and, indeed, all national and international bodies responsible for recommending radiation protection guidance now are unanimous in their belief that radiation protection standards should be premised on the assumption that any exposure to radiation entails a risk of deleterious effect and that it is prudent to assume that no threshold exists with regard to genetic effects and cancer induction (the most important somatic effect) following low-dose exposure to ionizing radiation. Thus, all radiation standards incorporate as a basic tenet that all exposures must be maintained as low as reasonably achievable ("ALARA"). This tenet is embodied in EPA, NRC and DOE radiation protection regulations, standards and guidance.

A lack of attention to the ALARA principle at the SRP over the years has already resulted in cesium-137 contamination offsite with exposures up to 4.6 R/year, five times the level of natural background radiation. The old approach, apparently still followed at SRP, of "pollute and dilute" should be considered no longer viable. It is unacceptable to permit the direct discharge of the L-Reactor cooling water into Steel Creek which will, according to the EA, flush out some 46 curies of cesium-137 into the Savannah River. There are several reasonably achievable alternatives, such as cooling towers, that would avoid any release of the cesium-137.

DOE has asserted that L-Reactor operation will result in low radiation exposures to the members of the public that use the Savannah River as a source of drinking water.2/ These estimates, however, are incomplete since they do not take into account cumulative exposures from all existing and foreseeable nuclear facilities along the Savannah River. In any event, the exposures directly attributable to the L-Reactor are unnecessary and would be avoided if the L-Reactor met the same safety and environmental standards applied to nuclear power reactors.

With the start-up of the L-Reactor, SRP will withdraw 11% of the average flow and 24% of 7 day - 10 year low flow of the Savannah River. The L-Reactor will discharge each minute

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2/ Other potential vectors of radionuclide contamination are fish and waterfowl.

approximately 176,000 gallons of water at a temperature of approximately 176° F into the Steel Creek, a tributary of the Savannah River. Such water temperatures are lethal for most higher life forms. This unnecessary thermal discharge will eliminate what the Savannah River Ecology Lab (SREL) has called "a rich and diverse biotic community" in Steel Creek.[3] The SREL states unequivocally that the startup of the L-Reactor without mitigative measures will have "substantial" impacts on the Steel Creek ecosystem and will turn the Steel Creek steam corridor and floodplains into a "sacrifice zone".[4]

Some 1100 acres of Savannah River wetlands will be destroyed. The proposed discharge will eliminate habitat and breeding grounds for wildlife, including waterfowl, fish, and endangered or threatened species. SREL raises the concern that as this swamp becomes increasingly defoliated, "it may not continue to be possible to cool reactor effluents to levels that meet required standards at the Savannah River."[5] The proposed thermal discharges would be in violation of existing South Carolina water quality standards for Steel Creek.

3/ Savannah River Ecology Lab, "An Evaluation of the Steel Creek Ecosystem in Relation to the Proposed Restart of the L-Reactor: Interim Report" at p. I-3 (SREL-11, UC-66e, April 1982)

4/ SREL, "An Evaluation of the Steel Creek Ecosystem in Relation to the Proposed Restart of the L-Reactor", at pp. VIII-1, 2 (SREL-9, VC-66e, October 1981).

5/ *Id.*, at p. II-12.

The proposed discharge will also increase the volume of heated water entering the Savannah River at the mouth of the Steel Creek. In Summer, L-Reactor operation will increase overall river temperature by .25 to .50 degrees beyond the current increase of 1.0 degree, an average attributable to the other SRP reactors. It would violate the existing thermal limitations in the NPDES water pollution permit for SRP, which already are at times exceeded by SRP. DOE asserts that the effects of these discharges on the Savannah River will be negligible. However, the EA presents no data on the effects of the thermal effluents where they enter the river. The nearest sampling station is located six miles downstream from the sources of the heated effluent. DuPont's underlying study (EID, at p. 5-71), admits that

> ...the effects of thermal plumes were not studied. The stations were beyond the area where an effect from the plumes might be damaging.

DOE relies upon studies by the Academy of Natural Sciences of Philadelphia (ANSP) which simply count the numbers of species in the river in order to argue that SRP operations have had no discernible effects on aquatic communities near the sampling stations. Yet the ANSP studies do not treat the number of organisms or their productivity, both of which are critical factors when discussing impacts. Careful scrutiny of ANSP data presented in the underlying DuPont report (EID, at pp. 2-91 - 2-93) on species of algae and microinvertebrates -- which form the base of the food chain -- does suggest that heated discharges are having some effect on aquatic life in the river.

In summary, DOE has the information to indicate that there are impacts from the thermal discharges on the Savannah River. It is admitted that the data are inadequate or unavailable. Yet the EA somehow concludes that the effects are negligible based on data collected six miles away from the stretch of the river that is the most likely to be injured. Once again, these discharges are reasonably avoidable and would not be tolerated in the case of a power reactor, as evidenced by the use of cooling towers just across the river at the Vogtle Nuclear Power Station.

DOE has not given serious consideration to the construction of a cooling tower or other alternatives which would eliminate or reduce both radiological and thermal discharges. Assuming the validity of DOE's cost estimates for the planned "once through" system versus a cooling tower, the cost of either would be about the same after approximately eleven years since the "once through" system entails much higher operating costs. (See EID, Chapter 9.) In regard to environmental costs, cooling towers are highly preferable. The increased use of Savannah River water would be reduced by over a factor 10, the destruction of wetlands lowered from 1100 to 50 acres, and any impacts on the Savannah River, which at this point are unknown, would be eliminated.

IV. DOE Has Not Met Its Environmental Responsibilities In Regard to the L-Reactor

In the Spring of 1980, the then Assistant Secretary of Energy for Defense Programs was asked by a member of the House Armed Services Subcommittee whether an Environmental Impact Statement (EIS) would be required to reactivate the L- or R-Reactor at SRP. The answer from Assistant Secretary Sewell was:

> An environmental impact statement would be required to reactivate either the L or R Reactor. It is anticipated that this effort would take 1 to 2 years to complete.6/

This response was not surprising in light of a decade of law and practice under the National Environmental Policy Act of 1969 (NEPA), which requires the preparation of an EIS for any "major Federal action significantly affecting the quality of the human environment." It had been unchallenged that the operation of nuclear reactors involves a range of severe environmental effects and the irretrievable commitment of resources. Since the passage of NEPA, not a single nuclear reactor of the size of the L-Reactor has gone into operation in the U.S. prior to completion of an EIS.

The apparent decision by DOE to move ahead with the preparation of an EIS on the L-Reactor at that stage was

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6/ See DOE Authorization Legislation (National Security Programs) for Fiscal Year 1981 Hearings on H.R. 6621 [H.R. 7265] Before the Subcommittee on Procurement and Military Systems of the House Committee on Armed Services, 96th Cong., 2nd Sess. 80 (1980).

consistent with the NEPA Regulations of the Council on Environmental Quality and DOE's own NEPA guidelines, which require the integration of the NEPA process with other planning at the earliest possible time. The purpose of early initiation of an EIS is to insure that decisions reflect environmental values, avoid delays later in the process, and to head off potential conflicts. DOE's own guidelines state that the relevant environmental document will be prepared, considered, and published before making a go/no go decision on the project.

An EIS is both a detailed environmental study and a record of a decision-making process. In preparing an EIS, the Federal agency must evaluate all foreseeable effects and consider all reasonable alternatives. It must seek the advice of State and other Federal Government agencies. It must provide the public with the opportunity to participate in the decision-making process. At a minimum, the agency is obliged to respond to comments submitted on a draft EIS.

In contrast, an Environmental Assessment is a brief analysis prepared to determine whether or not the proposed action is a major federal one with significant effects on the environment and, thus, whether or not an EIS is required. There is no formal opportunity for outside review or comment. However, the agency is required "to the extent practicable" to involve environmental agencies and the public in the preparation of an EA. 40 CFR §1501.4.

By November 1980, a month after the beginning of L-Reactor repairs, DOE's line on the need for an EIS had begun to change. It was now being suggested to inquiring Congressmen that an environmental assessment might suffice, although no decision had been made.[7] DOE officials did not forewarn either the Senate or House Armed Services Committee that the L-Reactor Project might be controversial in light of growing concerns in the region concerning nuclear safety and radioactive wastes.

Almost a year later, DOE still had not initiated the EIS process for the L-Reactor renovation. Mr. Robert Morgan, Director of the Savannah River Plant told a Senate Armed Services Subcommittee in Spring 1981 that "an exemption from the National Environmental Policy Act requirements would be beneficial."[8] However, DOE failed to get a NEPA exemption for the L-Reactor. The FY 1982 authorization bill reported out of the Senate Armed Services Committee omitted language from a proposed amendment which would have commended DOE's environmental performance and circumscribed NEPA's application to DOE weapons-related facilities.

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[7] Energy and Water Development Supplemental Appropriations for 1981; Hearings Before the Subcommittee on Energy and Water Development of the House Committee on Appropriations, 96th Cong., 2nd Sess. 51, 59. (1980)

[8] Fiscal Year 1982 DOE Authorization for National Security Programs, Hearings on S. 846 Before the Subcommittee on Strategic and Theater Nuclear Forces of the Senate Committee on Armed Services, 97th Cong., 1st Sess. 325 (1981).

In December 1981, the Congress passed the Nuclear Energy Authorization Act of 1982, P.L. 97-10., 95 Stat. 1163. Section 212 of this statute states that no funds appropriated pursuant to this Act "may be obligated or expended for the purpose of preparing an environmental impact statement not already in the process of preparation with respect to the operation of any defense facility of the Department unless the preparation of such statement is required by statute."[9/] It was made clear in both Senate and House floor debates that this section was not intended to amend NEPA nor relieve DOE of any of its obligations under NEPA.

Having now delayed the start of the NEPA process on the L-Reactor Project for over a year in violation of the NEPA Regulations and having failed to obtain a NEPA exemption, DOE began to prepare an EA to show that the proposed $214 million reconstruction and startup of the L-Reactor was not "a major Federal action significantly affecting the quality of the human environment" and, thus, did not require an EIS. In August 1982, DOE finally published its Environmental Assessment on L-Reactor Operation.

Someone reading the EA gets the impression that DOE was merely proposing to flip on a switch to restart a reactor which

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9/ DOE recently completed a draft EIS on the operation of its Pantex nuclear weapons facility. It is ironic that it was the controversy over the Pantex plant which first generated the impetus for this amendment.

had stood idle for 15 years. There was no indication that DOE was spending over $200 million to repair and renovate the reactor. The EA does not represent a balanced, objective study of the impacts of L-Reactor operation, but rather it seeks, as we have indicated, to minimize as much as possible its effects. The EA, nonetheless, shows that the startup of the L-Reactor would clearly have "significant environmental effects", as measured by the criteria in the NEPA Regulations, 40 CFR §1508.27(b), and, therefore, would require a full EIS. The operation of the L-Reactor would increase the hazard to public health and safety ((b)(2)); impact wetlands ((b)(3)); involve nuclear risks which are highly controversial, uncertain, and unique ((b)(4), (b)(5)); may adversely affect an endangered species ((b)(9)); and violate State and Federal environmental laws or requirements ((b)(10)). The law is quite clear that even had an EIS been prepared earlier on the L-Reactor, in the early 1970's for example, the passage of time alone would indicate strongly the need to prepare a supplemental EIS for the start-up of the L-Reactor in light of our increased our understanding of environmental effects and changes in health and environmental standards.

V. Conclusion

Having stalled the start of the EIS process for over two years, DOE now complains that compliance with NEPA will delay the start-up of the L-Reactor, now scheduled for October 1983. This start-up date is also employed as an excuse for not seriously considering alternatives which would make the L-Reactor safer or reduce radiological and thermal discharges. Yet we believe that there is still ample time in which to proceed with and EIS on the L-Reactor Project in a manner which accommodates the interests of all affected parties.

The repair and renovation of the L-Reactor is one of several of DOE's initiatives to expand nuclear weapons materials production. Each year the L-Reactor will produce about 500 kgs. of plutonium, enough for about 100 atomic bombs. Yet the L-Reactor's annual output would represent only about 6/10ths of 1% of the plutonium in America's nuclear weapons stockpile. Also, considering the Administration decision already to cut back from 200 to 100 MX missiles and DOE's pronouncements that it is ahead of its plutonium production targets, it appears doubtful that our national security will be in any way affected by taking the time necessary to complete the EIS process. It is in everyone's interest to see the environmental issues raised by the L-Reactor Project resolved properly and in accordance with the law.

Enclosure No. 31

NATIONAL WILDLIFE FEDERATION
CAROLINA WETLANDS PROJECT
1033 WADE AVENUE, SUITE 207
RALEIGH, NORTH CAROLINA 27605
919/832-2971

STATEMENT OF
DERB CARTER
AT A PUBLIC HEARING
BY THE
SENATE ARMED FORCES COMMITTEE
CONCERNING
THE RESTART OF THE L-REACTOR AT
THE SAVANNAH RIVER PLANT
FEBRUARY 9, 1983

My name is Derb Carter. I am the Director of the Carolina Wetlands Project, an office of the National Wildlife Federation in Raleigh, North Carolina. The National Wildlife Federation is the nation's largest conservation organization with 4.3 million members and associates and affiliate organizations in all fifty states. The Carolina Wetlands Project is a regional office of the National Wildlife Federation addressing wetland loss and protection in North and South Carolina. Carolina Wetlands Project staff include two wetland resource specialists who have conducted field research through a broad range of wetland systems in the Southeast.

We appreciate the opportunity to testify today. Our comments will focus on the determination in the environmental assessment that destruction of a minimum of one thousand acres of wetlands is environmentally insignificant. We reviewed the environmental assessment prepared by the Department of Energy and found adequate documentation of the wetlands, fishery, and wildlife impacts. We disagree, however, with the finding of no significant impact.

The environmental assessment states that thermal discharge will immediately eliminate 250 acres of swamp forest wetlands. An additional 750 acres will be modified at a rate of 7 to 10 acres per year. Floodplain spawning of recreationally or commercially valuable fish and habitat for the endangered American alligator will be eliminated or adversely affected. Available habitat for wading birds, semiaquatic mammals, certain fish, and other species will be eliminated. In short, the natural and functional values of a minimum of 1000 acres of successional swamp forest wetlands will be destroyed and this loss is environmentally significant.

Table S-1 in the environmental assessment is misleading. The table compares differences between pre-1968 and post-1984 L-Reactor operational impacts. The baseline for comparison of wetland systems effects in the table is the operational status of L-Reactor pre-1968. The environmental assessment notes on page S-2 that the systems have been recovering from thermal stress and have become a productive ecosystem. The baseline for comparing wetland systems impacts from the proposed start up and resulting thermal discharge should be the existing productive system. Using the existing system as a baseline would result in a more than negligible impact to wetland systems from new thermal discharge.

The area to be affected by thermal discharge is undergoing ecological succession and returning to a typical swamp forest ecosystem. The functional values of these wetland systems are well documented. These wetlands are among the most productive and valuable natural systems. Swamp forests provide habitat and forage foods for a wide diversity of fish and wildlife species, some of which are endangered, and spawning habitat for several species of fish. It is the ecological interrelationships of these systems with other natural systems that makes these areas particularly important. Swamp forests are coupled to downstream estuarine systems and hydrologically coupled to riverine systems. By virtue of this coupling swamp forests filter nutrients, sediment, and other pollutants from the water and provide organic detritus to downstream systems.

As an example of the functional values of these systems, which has direct implications with respect to this proposal, is research which has demonstrated that tributaries from the Savannah River have trapped and held radioactive cesium potentially reducing contamination of commercial and sports fishes in the Savannah River.

The wetlands areas to be affected by thermal discharge provide habitat to a wide diversity of wildlife. Recent surveys have identified 66 species of fish, 60 species of reptiles and amphibians, 59 species of breeding birds, and 25 species of mammals. Nests of the endangered American alligator have been located in the Steel Creek corridor. Wood storks also frequent the area. The U. S. Fish and Wildlife Service has stated that sufficient information currently exists to list the wood stork as endangered or threatened and such listing is anticipated. In sum, 1000 acres of valuable wildlife habitat will be eliminated or destroyed by thermal discharge.

One cannot minimize the importance of the direct loss of 1000 acres of forested wetlands by noting that the affected area is but a certain percentage of existing floodplain wetlands. The direct loss of one thousand acres is important when viewed in the context of cumulative national, regional, and local losses. It has been estimated that twenty percent of the wetland systems on the Savannah River Plant will be eliminated by thermal discharge and approximately 23,000 acres of floodplain forests have been eliminated by construction of impoundments on the Savannah River.

The public value of wetland areas is demonstrated by the protection afforded these areas under Section 404 of the Clean Water Act, Floodplain Executive Order 11988, and Wetlands Executive Order 11990. Federal permits or actions affecting wetlands often trigger NEPA and in some cases the loss of wetland areas determined to be significant is far less than the one thousand acres affected by this action. For example, the Department of Defense is currently conducting a NEPA review on a proposal to discharge dredge spoil in a 450 acre tract containing isolated wetlands at the Military Ocean Terminal at Sunny Point near Wilmington, North Carolina. The wetland areas are but a small portion of the 450 acre tract but the natural values affected, including, incidentally, breeding habitat for the endangered alligator, are the principal environmental concern requiring preparation of an environmental impact statement.

It is also noteworthy that the functional value of the swamp forest wetlands affected by this proposed action exceed the functional values of the isolated wetlands to be affected at Sunny Point by the deposition of dredge material.

It is our opinion that the direct loss of one thousand acres of successional forested wetlands is environmentally significant. The recirculation system and cooling tower alternatives discussed in the environmental assessment were rejected based on cost and scheduling delays. These alternatives could substantially reduce or eliminate significant wetland losses and should be evaluated through the NEPA process.

We appreciate the opportunity to testify. The incremental loss of the natural and functional values of wetland systems is an important public concern. We would hope this project proceeds in a manner in which these public values are protected and maintained.

Enclosure No. 32

BELVEDERE

BEECH ISLAND

Greater
North Augusta Chamber of Commerce

Triangle

NORTH AUGUSTA

P.O. Box 6246
235 Georgia Avenue
North Augusta, South Carolina
29841
Phone (803) 279-2323

THE GREATER NORTH AUGUSTA CHAMBER OF COMMERCE IS DIRECTING ITS APPEAL FOR THE START-UP OF THE L-REACTOR WITHOUT ADDITIONAL ENVIRONMENTAL STUDIES ON THE BASIS OF THE ADEQUACY OF THE ENVIRONMENTAL ASSESSMENT AND ON THE GOOD NEIGHBOR WHICH THE PLANT HAS BEEN.

THE EARLY START-UP WILL ADD APPROXIMATELY 400 PERMANENT EMPLOYEES AND WILL ADD SOME $10 MILLION TO THE ECONOMY. THIS IS IMPORTANT CONSIDERING THE LAY-OFF'S THAT ARE OCCURRING IN OTHER INDUSTRIES.

THE SAVANNAH RIVER PLANT HAS CONDUCTED ITS MISSION IN AN ENVIRONMENTALLY SOUND MANNER THROUGH CONTINUED MONITORING, EVALUATION AND PROCESS IMPROVEMENTS. AS A FURTHER OBJECTIVE, ENVIRONMENTAL RESEARCH CONTINUES AS AN ON-GOING PROCESS. THE ENVIRONMENTAL RESOURCES ARE PROFESSIONALLY MANAGED THROUGH A WELL-PLANNED PROGRAM.

TO THE BEST OF OUR KNOWLEDGE AND BELIEF, THE L-REACTOR PRESENTED NO HEALTH HAZARDS TO THE COMMUNITY OR THOSE IN THE WATER DISPERSION AREA IN THE PAST. CESIUM 137, A BY-PRODUCT OF THE OPERATION, IS RELEASED IN QUANTITIES THAT ARE NEGLIGIBLE. IT WAS, IN FACT, POINTED OUT THAT OTHER AREAS IN OUR STATE HAVE NATURALLY OCCURRING RADIATION MUCH HIGHER THAN WILL BE PREVALENT AFTER THE START UP OF THE L-REACTOR.

THE SAVANNAH RIVER PLANT MEETS ALL OF THE REQUIREMENTS OF THE CLEAN AIR ACT, THE NATIONAL ENVIRONMENTAL POLICY ACT, THE SAFE DRINKING WATER ACT, THE TOXIC SUBSTANCES CONTROL ACT, AND THE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT. THE PLANT IS ON SCHEDULE FOR COMPLIANCE WITH THE CLEAN WATER ACT AND THE RESOURCE CONSERVATION AND RECOVERY ACT. ADDITIONALLY, ALL RELEASES ARE WITHIN DEPARTMENT OF ENERGY RADIATION STANDARDS.

AS THE SAFETY RECORD OF THE PLANT INDICATES, IT HAS BEEN A GOOD NEIGHBOR TO THE COMMUNITY. THERE HAVE BEEN NO FATALITIES OR INJURIES FROM NUCLEAR OPERATIONS OR RADIATION EXPOSURE SINCE THE PLANT'S START-UP IN 1953 AND ITS INDUSTRIAL SAFETY RECORD IS EXEMPLARY.

THE ABOVE INDICATES THAT THE SAVANNAH RIVER PLANT IS THE TYPE OF INDUSTRIAL NEIGHBOR THAT IS DESIRED IN OUR AREA. THE TOTAL ECONOMIC IMPACT TO THE CSRA IS SIGNIFICANT. OF THE TOTAL EMPLOYMENT AT THE SAVANNAH RIVER PLANT 1,800 EMPLOYEES RESIDE IN THE NORTH AUGUSTA/BELVEDERE/BEECH ISLAND AREA REPRESENTING A BOOST IN THE LOCAL ECONOMY OF SOME $60-70 MILLION. THE ADDITIONAL EMPLOYMENT RESULTING FROM THE EARLY START-UP OF THE L-REACTOR WILL SURELY EXPAND THESE FIGURES.

REQUIRING A FULL ENVIRONMENTAL IMPACT STUDY WILL DELAY THIS BOOST TO THE ECONOMY THAT IS SO BADLY NEEDED. THE TRACK RECORD THUS FAR CLEARLY INDICATES THAT THE STUDY WILL ONLY DELAY WHAT HAS ALREADY BEEN PROVEN TO BE ENVIRONMENTALLY SAFE. THIS CHAMBER ENDORSES THE START-UP OF THE L-REACTOR WITHOUT ADDITIONAL ENVIRONMENTAL IMPACT STUDIES.

LEWIS R. WESSINGER
PRESIDENT
GREATER NORTH AUGUSTA CHAMBER OF COMMERCE

Enclosure No. 33

The Greater Aiken
Chamber of Commerce
400 Laurens Street, Northwest P.O. Box 892 Aiken, South Carolina 29801 (803) 648-0485

February 9, 1983

The Honorable Strom Thurmond, Chairman
Senate Armed Services Committee
209 Russell Building
Washington, DC 20510

RE: Support of the L-Reactor Startup as presented at a Public Hearing on February 9, 1983, North Augusta High School, North Augusta, SC

Dear Senator Thurmond:

As a Chamber of Commerce, our organization is chiefly interested in the economic condition and the quality of life of Aiken. We represent approximately 400 businesses and industries in the Aiken Area. From an economic standpoint, Savannah River Plant means a great deal to Aiken. It helps to make Aiken one of the highest income per capita counties in South Carolina. The startup of L-Reactor would create about 400 permanent jobs which means a great deal to our county, which has been hit by heavy layoffs in the textile industry.

More importantly, we make our homes and raise our families in Aiken. We're concerned about the quality of life in Aiken no less than is the Savannah River Plant which is a valued and responsible industrial neighbor. Of course, it stands to reason the environmental impact of starting up the L-Reactor is of significant concern. However, based on the Environmental Assessment that has already been performed for the Department of Energy, the adverse environmental impact, if any, is shown to be insignificant.

Let's not confuse this with the question of whether the L-Reactor is necessary for purposes of national defense. That question has already been decided by the Department of Defense. The question is whether a full Environmental Impact Statement is required.

The following is an excerpt from a letter written on December 16, 1982, to Governor Riley from the Greater Aiken Chamber of Commerce:

> The Environmental Assessment was performed to meet the requirements of the National Environmental Policy Act of 1969, to determine if the more extensive Environmental Statement would be required. The Environmental Assessment was based on the past actual operating experience not only of this reactor, but also of three (3) other similar reactors which are now operating at the Savannah River Plant

> without significant environmental impact. The Study also took account of the extensive studies and expertise at the Savannah River Plant which is recognized around the world as to radionuclid release, transport, deposit, resuspension and dispersion. On the basis of these studies, the Environmental Assessment shows that the more extensive Environmental Impact Statement is not needed. Thus, we believe that the Environmental Impact of starting the L-Reactor is truly insignificant. This position is supported by: (1) the past safe operating experience of the Savannah River Plant and the L-Reactor in particular without a significant (almost indiscernible) environmental impact; (2) the present very low environmental impact of the three reactors presently operating at the Savannah River Plant; and (3) the results of the studies that are based on years and years of expertise and data in predicting and then verifying by monitoring, the doses which the population would receive from nuclear facilities.

Two other items should be included. In reference to the process water, because of the buffer zone of swampland provided for in the plant's design, the thermal effects of the process water released from the Savannah River Plant are no greater than a degree or two of temperature at the point they enter the Savannah River. In addition, it has been shown that the radioactive Cesium flushed out of the swampland by L-Area process water will not cause any significant effect in drinking water downstream.

In a year of poor economy, high unemployment, and unbalanced budgets, it seems a mismanagement of funds and a poor business decision to spend several millions more of tax payers' money and delay the startup of L-Reactor for several years to do a full Environmental Impact Study on such a low risk opportunity.

As stated in our letter to Governor Riley, "If we were not fully convinced as to the safety and insignificant environmental impact of this operation on us, our families, and fellow citizens, we would not support and propose it's early startup and operation. We sincerely believe that the startup of the L-Reactor, on the basis proposed by the Department of Energy, is in the best interest of the citizens of this area and the citizens of the Lower Savannah Region, as well as the citizens of the State of South Carolina."

Thank you for allowing us to come before your committee and stating our position.

Yours truly,

Jim Moore

Jim Moore, President

Enclosure No. 34

OLUTION
BER R-83-2

STATE OF SOUTH CAROLINA)
COUNTY OF AIKEN)
CITY OF NORTH AUGUSTA)

RESOLUTION TO ENCOURAGE
RESTART OF L-REACTOR AT
SAVANNAH RIVER PLANT

RESOLUTION

WHEREAS, the Department of Defense and the Federal Government have determined that the restart of L-Reactor is vital to our national defense, and a major delay in restart could endanger our nation's security; and

WHEREAS, the L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968; and

WHEREAS, the DuPont Company, in conjunction with the Department of Energy, has operated the Savannah River Plant, including three other Reactors in a safe and efficient manner, and the citizens of our area have the utmost confidence in the DuPont Company and the Department of Energy's operation of the Savannah River Plant, including the restart of L-Reactor.

NOW, THEREFORE BE IT RESOLVED that the City Council of the City of North Augusta, South Carolina, urges all agencies, both state and national, to reach a prompt agreement so that the restart of L-Reactor will not be delayed beyond the scheduled startup date.

DONE AND RATIFIED THIS 24 DAY OF January 1983, BY THE MAYOR AND CITY COUNCIL OF THE CITY OF NORTH AUGUSTA, SOUTH CAROLINA, IN SPECIAL SESSION OF CITY COUNCIL.

D. Kim Ledford
D. Kim Ledford, Mayor

Thomas W. Greene
Thomas W. Greene, Mayor Pro Tem

William L. Gray
William L. Gray, Councilman

James L. Harris, Councilman

Daniel B. Layman, Councilman

Paul L. Roggenkamp, Councilman

Ellen S. Smith, Councilwoman

ATTEST:

City Clerk

Enclosure No. 35

The Honorable Strom Thurmond
Chairman
Senate Armed Services Committee
Washington, D. C. 20510

Attention: Mr. Jim Smith

We, the undersigned citizens of Aiken, go on record supporting the restart of L Area Reactor at the Savannah River Plant as scheduled by the Department of Energy in October of 1983.

We believe that the record of safe operation at the Savannah River Plant during the past thirty years justifies our confidence that the plant will continue to be operated without harm to the public or to the environment, and that the environmental assessment carried out at the direction of the Department of Energy affords further assurance that the reactivation of L Area will not present any hazards.

We respectfully request that the proposal to delay startup of the L Area Reactor be rejected because of the adverse affect such a delay will have on the nation's defense posture and also because of the needless expenditure of millions of dollars of taxpayer's money that would be involved.

NAME:	ADDRESS:
E. T. Sheely	110 Northwood Dr Aiken, S.C.
Sally T. Lloyd Berbert	1104 S. Boundary Ave. S.E.
Dorothy H. Andreasen	1116 Evans Road, Aiken - SC
Jean G. Sheely	110 Northwood Dr. Aiken, S.C.
Shirley M. Andelman	85 Dexter [illegible] Aiken SC 29801
Eldon M. Berry	311 Smith Ave. New Ellenton, S.C.
Jennie E. Ray, Jr	451 Powder House Rd. SE, AIKEN, SC 29801
Lessie B. Price	1550 Redd St., N.W. Aiken, S.C. 29801
Diane Whitmire	2927 Tennessee Ave, Aiken, SC 29801
Kathy Ferguson	3506 Seneca Ave., Aiken, SC 29801
Julia S. Beck	105 Savannah Dr., Aiken, SC 29801
Portland F. Gleason	1003 Wheeler Dr., Aiken, SC 29801
Doris W. Burkhardt	219 George St., New Ellenton, SC 29809
Mary G. Tatum	711 So. Boundary St, Aiken, SC 29801
Gail P. Crowder	427 Swamp Rd Beech Island SC 29841
William A. Pierce	107 Westwood Drive, Aiken, SC 29801
Jean Smith	28 Erskine Lane, Aiken, SC 29801
Sam McClearn	122 Dunbarton Circle, Aiken, SC 29801
James O. Hightower	714 Collingwood Rd. Aiken S.C. 29801
Mitchell W. Keenan	606 Pershing Dr., N. Augusta, SC 29841
Sarah Burkhart	73 Ward Cr. Aiken SC 29801
Sue Greenway	206 Old Whiskey Rd. New Ellenton, S.C. 29809
Joyce Reames	112 Lewis Way, Beech Island, S.C. 29842

The Honorable Strom Thurmond
Chairman
Senate Armed Services Committee
Washington, D. C.   20510

Attention: Mr. Jim Smith

We, the undersigned citizens of Aiken, go on record supporting the restart of L Area Reactor at the Savannah River Plant as scheduled by the Department of Energy in October of 1983.

We believe that the record of safe operation at the Savannah River Plant during the past thirty years justifies our confidence that the plant will continue to be operated without harm to the public or to the environment, and that the environmental assessment carried out at the direction of the Department of Energy affords further assurance that the reactivation of L Area will not present any hazards.

We respectfully request that the proposal to delay startup of the L Area Reactor be rejected because of the adverse affect such a delay will have on the nation's defense posture and also because of the needless expenditure of millions of dollars of taxpayer's money that would be involved.

NAME:	ADDRESS:
Marie P. Renwick	Rt. 1, Box 140B Aiken, SC
Norma C. Hetrick	120 Chesterfield St Aiken S.C.
Edward W. [illegible]	P.O. Box 725 Jackson SC
Patsy Boyd	7 Spyglass Dr Aiken, S.C.
Marilyn Ericson	5 Winthrop Ave - Aiken SC
Marilyn Moultrie	1905 Alpine Dr. Aiken SC

Enclosure No. 36

STATEMENT

Beaufort-Jasper County Water Authority

February 9, 1983

Senator Thurmond, Ladies and Gentlemen:

I am Ed Duryea, General Manager of the Beaufort-Jasper County Water Authority, which Authority was created by the South Carolina Legislature in the early 1950's, with the expressed mission of obtaining a reliable water supply and furnishing potable water for domestic and industrial use in and around several areas of Beaufort County which were without safe potable water at that time. The initial customers of the Water Authority included Parris Island Marine Recruit Depot, Beaufort Marine Corps Air Station, Beaufort Naval Hospital, The City of Beaufort and the Town of Port Royal. Since that time the service area of the Authority has been extended to include most of the islands north of Broad River, and parts of Beaufort and Jasper County south of Broad River. At this time, as far as we have been able to ascertain, the Authority's system is the only user for domestic purposes of water from the Savannah River downstream from the Savannah River Project near Augusta, Georgia. The Authority presently serves about 50,000 people, and is the only available water supply to a great majority of those customers. The ground water supply in the northern part of Beaufort County began deteriorating in the later 40's and early 50's, and in many areas is, since that time, continuing to deteriorate to a point where the water is not useable for human consumption. You can readily see that water is vital to our area, and the quality of the Savannah River must be maintained.

Upon becoming apprised of the Department of Energy's intentions to reactivate the L-Reactor at the Savannah River Plant, and the flushing of Cesium 137 into the River along with the other resulting activities, the Authority employed an independent consultant to look into the possible effects of the DOE's proposed action on the quality of the water coming into our plant. Our concerns have centered around the effect of Cesium on our drinking water, and the effect of its accumulation in our Canal proper and our treatment plant sludge.

We have met with representatives of the Department of Energy and have corresponded with them in some depth, as will be shown by two attached letters. You can see that we have received assurances that the concentration of Cesium 137 will be well below Environmental Protection Agency drinking water standards, and that the Department of Energy will assist the Authority in disposing of hazardous sludge in the event that unforseen concentrations do occur. The Authority would like to have a firm commitment from the Federal Government to resolve any Canal or sludge disposal problems or hazardous conditions that may result from the L-Reactor operations, and a commitment that the Federal Government will bear all expenses related thereto.

It is apparent from information prepared by NUS Corporation for the Department of Energy that the use of cooling towers would have several environmental advantages which we believe would give the Water Authority and other users of Savannah River water added protection. We understand that the cost and time factors have influenced the rejection of cooling towers and the proposed operation will rely on the discharge of cooling water into Steel Creek. The Authority recommends that the cooling tower alternative be given further consideration, including an evaluation of all environmental factors. In summary, we have no scientific basis for opposing the plan to restart the L-Reactor from a water quality and plant treatment standpoint on the basis of the information that has been furnished to us. Recognizing our duty to protect our water supply, we urge the continuation of a promised program to monitor our canal and our sludge, and to keep us informed of the results. We request that the

Department of Energy be required to adopt a reasonable schedule for monitoring and adhere to that set schedule. We also want to emphasize our desire to have a firm commitment from the Department of Energy to assist us, technically and financially, in the disposal of the sludge if this should prove to be a problem in the future due to releases from the L-Reactor and, finally, we request that the use of cooling towers and the closed circuit system for cooling water be given further consideration.

We appreciate the opportunity to present these comments.

Respectfully submitted,

Edward G. [illegible], General Manager
Beaufort-Jasper County Water Authority

BEAUFORT-JASPER COUNTY WATER AUTHORITY
P. O. BOX 275
BEAUFORT, SOUTH CAROLINA 29902
(803) 524-7322

MEMBERS
PAUL SCHWARTZ, SR.
CHAIRMAN
E.A. POLLOCK
SECRETARY
VERNON H. DE LOACH
LOUIS F. DAVIS
W. CLAUDE DAVIS, JR.
GEORGE G. TRASK
THADDEOUS Z. COLEMAN
WILLIAM C. HALL
CHARLES O. PEYTON

JOAB M. DOWLING
LEGAL COUNSEL

EDWARD S. DURYEA
GENERAL MANAGER

January 11, 1983

Mr. Robert L. Morgan, Manager
Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, S.C. 29801

Dear Mr. Morgan:

Thank you for your cooperation in providing information to us on the proposed L-Reactor operation at the Savannah River Plant. We are especially appreciative of the presentation that you made on December 9, 1982, and the accompanying report and material prepared and provided to us.

You can well appreciate our concern in this matter, as it affects the operation and quality of the water we supply to approximately 50,000 people in Beaufort and Jasper counties. We are the only source of potable water available in much of our service area.

From our review of the Environmental Assessment Report and your presentation, we understand that DOE has concluded that reactivation of the L-Reactor will not significantly affect our water quality. We would, however, appreciate receiving your response to two questions that we believe are particularly important to us as a Water Authority.

1. Would it be preferable (all factors considered) to use closed system cooling towers for reactivation cooling rather than a direct discharge to Steal Creek?

   It is apparent from information prepared by the NUS Corporation in evaluating alternative cooling systems that, from an engineering and environmental standpoint, the cooling towers are preferred. The installation of this type of system would remove all of the concerns of our Board (except a major atomic plant Catastrophe), since it would avoid flushing of any radioactive materials into the Savannah River, and hence into our drinking water (however small the quantity), and would avoid the concern of radioactive material in our plant sludge. There are other environmental benefits from this type system that are covered in the report as well. (eg. Impact on wetlands, etc.)

The current plan to discharge cooling water into Steel Creek, according to your report, seems to be dictated by two concerns:

(1) cost (39,000,000 for the cooling towers)
(2) time delay (1.5 years beyond the scheduled start-up date of October, 1983).

We would appreciate your careful re-review of this matter. Is this still the most realistic estimate of cost and time delay? Is the October 1983 date still critical and controlling? Is the cost/delay impact significantly more important than the environmental concerns?

2. If the ultimate decision is made to proceed with the direct discharge into Steel Creek, what impact will that have on the deposit of radioactive material in our canal and treatment plant sludge? We are particularly concerned about the possibility of a sludge disposed problem when it becomes necessary for us to dredge our wastewater ponds.

We would appreciate receiving your comments on these matters. We would like to review your response with our Board prior to preparing our comments for the public hearing to be conducted by Senator Thurmond on February 9, 1983. The content of our statement will be due in Washington by January 28, so we would like to receive your comments by January 21.

Very truly yours,

Paul Schwartz, Chairman

CC: Board Members
Senator J. Strom Thurmond

Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29801

JAN 21 1983

Mr. Paul Schwartz, Sr.
Chairman
Beaufort-Jasper County Water Authority
P. O. Box 275
Beaufort, South Carolina 29902

Dear Mr. Schwartz:

The Department of Energy (DOE) is pleased that the information we provided to you concerning the environmental analysis performed in connection with L-Reactor operation has been useful. We, like you, are interested in maintaining the water quality of the Savannah River. This letter addresses the two questions raised in your January 11, 1983 letter to me.

Your first question is directed at the preferability of cooling tower use and raises three specific concerns: (1) the realism of the cost and time delays; (2) the critical nature of the October 1983 date for L-Reactor restart; and (3) the importance of the cost/delay impacts relative to environmental concerns. Let me answer the last of these specific concerns at the outset; cost or delay considerations have not controlled our decisions, nor are these factors more important than your water quality or other environmental concerns. Since the potential environmental effects of L-Reactor operation on the Savannah River water quality are so small, the small environmental benefits of closed cycle cooling do not justify the associated cost or time delay.

We continue to believe that it is not necessary to use cooling towers for L-Reactor; the proposed operations will not cause either a health concern to the consumers of water supplied by your treatment plant or to plant workers. As discussed with you on December 9, 1982, our most recent studies show that the Cesium-137 (Cs-137) concentration in the drinking water supplied by your treatment plant would be 0.01 pCi/liter. Both this value, and the value of 1 pCi/liter conservatively estimated in the EA, are extremely small fractions of the Environmental Protection Agency drinking water standard of 200 pCi/liter. Thus closed cycle systems, regardless of cost or delay impacts, would not provide any significant health benefit to your customers; they would increase the consumption of Savannah River water, adversely affect vegetation due to salt drift deposition, create fogging (and in winter, icing) with potential effects on traffic safety, and reduce reactor production efficiency.

Returning to your first specific concern about the realism of cost and time delays, the total cost estimate of $39M to design, purchase and install the cooling tower system, including additional piping, valves, pumps and electrical controls, is still correct, within the general range of uncertainty of such preliminary estimates. The value of lost production capability is not included but is significant. The schedule delay of one and one-half years beyond October 1983 is undoubtedly an underestimate, since it does not include the time necessary to request and receive funding from Congress.

As to the second specific concern with regard to the importance of the October 1983 restart date, I am sure you are aware that the mission of DOE, and SRP in particular, is to provide defense nuclear materials to meet the established needs. The current need for special nuclear materials for national defense as approved by the President is such as to require L-Reactor to be operational by October 1983.

Your second question is concerned with the deposition of Cs-137 in your canal and treatment plant sludge. It is the unanimous judgement of our contractors and ourselves that there should be no sludge disposal problem when it becomes necessary to dredge the canal or waste water ponds as a result of Cs-137 deposition. Although the EA conservatively estimated 41 curies to be transported to the Savannah River over the first 10 years of L-Reactor operation, current studies result in estimates of only 14 curies to be so transported, of which only about 0.01 curies could potentially end up in the canal and treatment plant sludge.

The Cs-137 concentration in the sludge is estimated to be about the same as its content of naturally occurring radioactive potassium, K-40, (about 2 pCi/gram) as well as other naturally occurring radionuclides (uranium, thorium, radium, polonium, etc.) Thus we see no radiological problem whatsoever with sludge disposal. DOE has expanded the ongoing environmental sampling program at your facility to include sediment samples from your canal and the waste water ponds; you will of course, be informed of analysis results. There is full confidence that the L-Reactor operations will not make the sludge in your waste water ponds radiologically hazardous, and our monitoring program will confirm this. If there is ever a question about the sludge being a hazard due to L-Reactor operations, we will endeavor to assist you in satisfactory resolution.

JAN 21 1983

I hope this information is sufficient for you to prepare your comments for the public hearing to be conducted by Senator Thurmond on Feburary 9, 1983. If you or any of the board members have any further questions please contact me or M. J. Sires of my staff.

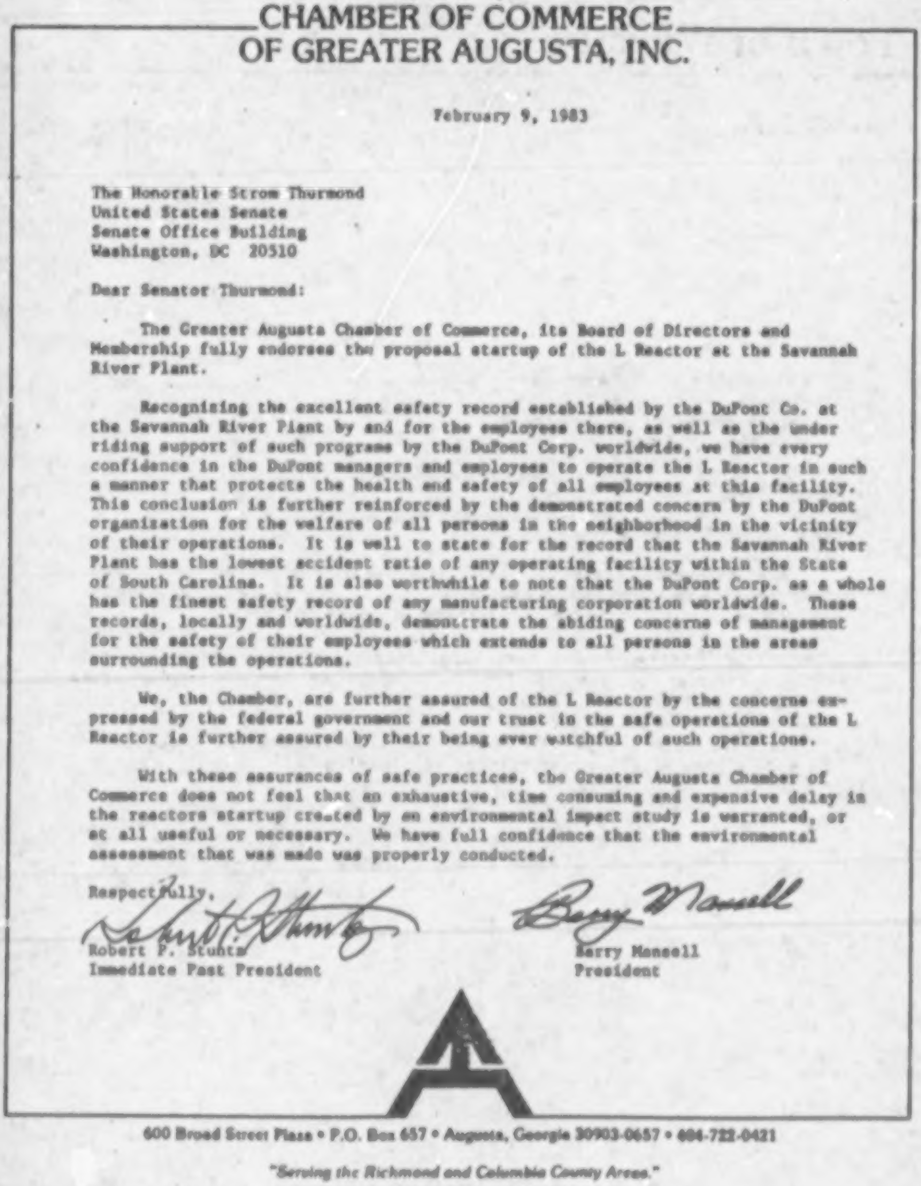
Sincerely,

RL Morgan

R. L. Morgan
Manager

cc: E. Duryea, General Manager
Beaufort-Jasper County Water Authority

Enclosure No. 37



CHAMBER OF COMMERCE
OF GREATER AUGUSTA, INC.

February 9, 1983

The Honorable Strom Thurmond
United States Senate
Senate Office Building
Washington, DC 20510

Dear Senator Thurmond:

The Greater Augusta Chamber of Commerce, its Board of Directors and Membership fully endorses the proposal startup of the L Reactor at the Savannah River Plant.

Recognizing the excellent safety record established by the DuPont Co. at the Savannah River Plant by and for the employees there, as well as the under riding support of such programs by the DuPont Corp. worldwide, we have every confidence in the DuPont managers and employees to operate the L Reactor in such a manner that protects the health and safety of all employees at this facility. This conclusion is further reinforced by the demonstrated concern by the DuPont organization for the welfare of all persons in the neighborhood in the vicinity of their operations. It is well to state for the record that the Savannah River Plant has the lowest accident ratio of any operating facility within the State of South Carolina. It is also worthwhile to note that the DuPont Corp. as a whole has the finest safety record of any manufacturing corporation worldwide. These records, locally and worldwide, demonstrate the abiding concerns of management for the safety of their employees which extends to all persons in the areas surrounding the operations.

We, the Chamber, are further assured of the L Reactor by the concerns expressed by the federal government and our trust in the safe operations of the L Reactor is further assured by their being ever watchful of such operations.

With these assurances of safe practices, the Greater Augusta Chamber of Commerce does not feel that an exhaustive, time consuming and expensive delay in the reactors startup created by an environmental impact study is warranted, or at all useful or necessary. We have full confidence that the environmental assessment that was made was properly conducted.

Respectfully,

Barry Mansell

Robert P. Stuntz
Immediate Past President

Barry Mansell
President

600 Broad Street Plaza • P.O. Box 657 • Augusta, Georgia 30903-0657 • 404-722-0421

"Serving the Richmond and Columbia County Areas."

Enclosure No. 38

Town of Williston

P.O. BOX 414, WILLISTON, SOUTH CAROLINA 29853

A. W. FLYNN, MAYOR

MRS. PATTY SHIPES, CITY CLERK

January 26, 1983

The Honorable Strom Thurmond
Chairman
Senate Armed Services Committee
Washington, DC 20510

Attention: Mr. Jim Smith

Dear Senator Thurmond:

The enclosed resolution was unanimously adopted at our regular Town Council Meeting held January 10, 1983, due to the great concern about the opposition to the restarting of L-Reactor at SRP.

I respectfully request that, time permitting, I be allowed to read this resolution at the hearing to be held in North Augusta, South Carolina, on February 9, 1983.

If time does not permit me to read this resolution, I request it be made a part of the transcript of the hearing.

Respectfully,

A. W. Flynn
Mayor

AWF/msw
Enc

A. J. GROVE
SAM B. HALFORD
H. L. HORTON

TOWN COUNCIL

BETTY JOWERS
RUBY STARNES
NORMAN L. WIDENER

Town of Williston

P.O. BOX 414, WILLISTON, SOUTH CAROLINA 29853

A. W. FLYNN, MAYOR

MRS. PATTY SHIPES, CITY CLERK

We, the undersigned citizens of Williston and the surrounding areas, endorse the attached Resolution in support of the timely start-up of L-Reactor at the Savannah River Plant by affixing our signatures.

James A. Morrison
Patty Shipes
Virginia Augustine
George Sizzell
Lynn Randolph
Thomas A. Burton
Robert L. Mills
Albert Smitz
Paul Iverson
Jerrie Bell
Jeff Still

Thomas R. Rulison
Ernest J. Harley
Shannon K. Croft
Victor M. Lancaster
Lyn Steele
Louis Strauss
Thomas Daniel Rivers
Carolyn H. Giles
Kelly G. Williams
Jack W. Moseley
Robert Cathern
Carolyn R. Morrow
Peggy Oliver
Sam Williams

Elvira L. Martin

A. J. GROVE
SAM B. HALFORD
H. L. NORTON

TOWN COUNCIL

BETTY JOWERS
RUBY STARNES
NORMAN L. WIDENER

Cooper Thompson Helen Van Wartwright
Joe L. Williams
Jimmy Steadman
Ernest Elling
Daniel T. Vinson
Chris Dunaway
Kay Dunaway
Danny Dunaway
Lisa Kirkpatrick
Brian Kirkpatrick
Ray Bruce
Cathy Bruce
Lawanna Counts
Kenneth Oliver
Darryl Oliver
Glenn Oliver
Fred Boan
Harley L. Shaw
Effie Van Wartwright
Kellie Shealy
J.C. Mason
Nancy L. Horton
[illegible]
Fronie C. Flynn
Marie C. Martin

Town of Williston

P.O. BOX 414, WILLISTON, SOUTH CAROLINA 29853

A. W. FLYNN, MAYOR

MRS. PATTY SHIPES, CITY CLERK

RESOLUTION
of
Williston Town Council
on
Restart of L-Reactor at the Savannah River Plant
January 10, 1983

WHEREAS, experience at the Savannah River Plant, operated by the Du Pont Company for the Department of Energy, indicates that nuclear reactor operations can be done safely and without significant impact to the environment, and

WHEREAS, the Federal Government has indicated that prompt restart of L-Reactor is necessary for our nation's defense, and delay in the restart could have adverse effects on our national security, and

WHEREAS, L-Reactor operated safely for about 12 years before it was placed on standby, and

WHEREAS, appropriate studies indicate that restart and operation will result in no significant environmental impact.

NOW, THEREFORE, BE IT RESOLVED, that the Williston Town Council urges concerned local, state, and federal agencies to reach agreement and take appropriate action to permit timely startup (scheduled October 1983).

A. W. Flynn
Mayor

Norman L. Widener
Councilman

Sam B. Halford
Councilman

A. J. Grove
Councilman

Bettie F. Jowers
Councilman

Rudy STARNES
Councilman

Herbert L. H
Councilman

ATTEST: Patty Shipes
City Clerk

A. J. GROVE
SAM B. HALFORD
H. L. HORTON

TOWN COUNCIL

BETTY JOWERS
RUDY STARNES
NORMAN L. WIDENER

Enclosure No. 39

Eugene B. Fickling
Mayor

Mrs. Amelia S. Martin
Clerk and Treasurer

Mrs. Joan McDonald
Assistant Clerk

Edwin T. Felton, Alderman
Cromer B. Gleaton, Alderman
Levi Daniels, Alderman
Carroll (Carrie) J. Johnson, Alderman
J. H. Lott, Jr., Alderman
Billy C. Sanders, Alderman

Town of Blackville

[illegible] MAIN STREET
BLACKVILLE, SOUTH CAROLINA 29817

January 27, 1983

Senator Strom Thurmond
Senate Office Building
Washington, D. C.

Dear Senator Thurmond:

This letter is in reference to the restart of the L Reactor at the Savannah River Plant.

The Blackville Town Council has discussed the impact that the restart of this reactor will have on our community and our state. We have adopted the attached resolution as of this date. We would appreciate you and Senator Mattingly considering our resolution during your hearing in North Augusta, S. C. on February 9, 1983.

Yours Truly,

Eugene B. Fickling

Eugene B. Fickling

Eugene B. Fickling
Mayor

Mrs. Amelia S. Martin
Clerk and Treasurer

Mrs. Joan McDonald
Assistant Clerk

Edwin T. Felton, Alderman
Cromer B. Gleaton, Alderman
Levi Daniels, Alderman
Carroll (Carrie) J. Johnson, Alderman
J. H. Lott, Jr., Alderman
Billy C. Sanders, Alderman

Town of Blackville

295 MAIN STREET
BLACKVILLE, SOUTH CAROLINA 29817

January 27, 1983

RESOLUTION OF THE BLACKVILLE TOWN COUNCIL

ON

RESTART OF L-REACTOR AT THE SAVANNAH RIVER PLANT

Be it known that the restart of L-Reactor is vital to the national defense and a major delay in restart could endanger our nation's security.

Be it known that L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968.

Be it known that the impact of L-Reactor operations on the streams of the Savannah River Plant and on the Savannah River has been demonstrated and the consequences are known to have had negligible effects on human health and safety and had inflicted no permanent damage to the environment.

Therefore,

Be it known that the Blackville Town Council urges the various governmental offices and agencies to reach prompt agreement so that the restart of L-Reactor will not be delayed beyond its scheduled date.

Enclosure No. 40

City of Bamberg

J. VIRGIL HICKS
Mayor

J. GUY BENTON
Clerk and Treasurer

Bamberg, South Carolina 29003

J. CARLISLE KEARSE, JR.
Mayor Protem
Police Commissioner

L. A. LAND
Pools, Parks, Public
Buildings Commissioner

J. HAROLD KEMMERLIN
Fire Commissioner

ROBERT A. SMITH
Street Commissioner

W. W. SWOAK
Insurance Commissioner

HENRY E. BATTS
License Commissioner

January 27, 1983

Senator Strom Thurmond
Senate Office Building
Washington, D.C. 20510

Dear Senator Thurmond:

During the hearings you and Senator Mattingly plan to hold in North Augusta, S. C. on February 9, 1983, the Bamberg City Council wishes you to consider the resolution passed on January 27, 1983 in support of the restart of L-Reactor at the Savannah River Plant. The Council members have noted in the press the related comments by various groups throughout the State as well as by some of the leadership in State Government. The Council wishes you to consider our collective views as the elected governing body of the City of Bamberg. A copy of our resolution on restart of L-Reactor is attached.

Most sincerely,

J. Virgil Hicks

J. Virgil Hicks, Mayor

RESOLUTION OF BAMBERG CITY COUNCIL
ON
RESTART OF L-REACTOR AT THE SAVANNAH RIVER PLANT
PASSED ON JANUARY 27, 1983

Be it known that the restart of L-Reactor is vital to the national defense and a major delay in restart could endanger our nation's security.

Be it known that L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968.

Be it known that the impact of L-Reactor operations on the streams of the Savannah River Plant and on the Savannah River has been demonstrated and the consequences are known to have had negligible effects on human health and safety and had inflicted no permanent damage to the environment.

THEREFORE

Be it known that Bamberg City Council urges the various governmental offices and agencies to reach prompt agreement so that the restart of L-Reactor will not be delayed beyond its scheduled date.

J. Virgil Hicks

J. Virgil Hicks, Mayor

January 27, 1983

Enclosure No. 41

SENATOR THURMOND, DISTINQUISHED MEMBERS OF THIS COMMITTEE, AND MY COLLEAGUE, I, WILLIAM HOLMES, MAYOR OF THE GREAT TOWN OF ALLENDALE, SOUTH CAROLINA, AM PLEASED IN HAVING THIS OPPORTUNITY TO COME BEFORE YOU TODAY AND TESTIFY ON BEHALF OF THE CITIZENS OF ALLENDALE OF OUR COLLECTIVE SUPPORT OF THE RESTART OF L-REACTOR.

ALLENDALE IS A SMALL RURAL TOWN WITH A POPULATION OF 4400 PEOPLE. THE TOWN OF ALLENDALE IS LOCATED APPROXIMATELY 12 KILOMETERS SOUTHEAST OF THE NEAREST SAVANNAH RIVER PLANT(SRP) BOUNDARY AND APPROXIMATELY 18 KILOMETERS SOUTHEAST OF L-REACTOR AREA. AS A SMALL RURAL TOWN, AGRICULTURE IS OUR BASIC AND PRIMARY INDUSTRY. A LARGE PERCENTAGE OF OUR CITIZENS DEPENDS ON AGRICULTURE OR RELATED BUSINESSES FOR A LIVING. OUR PEOPLE LIVE VERY CLOSE TO THE SOIL. WE ARE HARD WORKING AND INDUSTRIOUS PEOPLE AND VERY PROUD OF OUR WAY OF LIFE. WE ARE PROUD OF THE RICH HERITAGE THAT WE HAVE ESTABLISHED. WE DO HAVE THE UTMOST CONFIDENCE IN THE ABILITY OF OUR GOVERNMENT TO PROTECT AND PRESERVE OUR ENVIRONMENT IN ORDER FOR OUR CHILDREN'S CHILDREN TO INHERIT THIS RICH HERITAGE.

SAVANNAH RIVER PLANT HAS BEEN OUR NEIGHBOR FOR OVER THIRTY YEARS AND WE HAVE ESTABLISHED A GOOD RELATIONSHIP OVER THAT PERIOD OF TIME. IN OUR VIEW, SAVANNAH RIVER PLANT OPERATING REACTORS HAVE NEVER POSED A REAL THREAT NOR DANGER TO OUR PEOPLE AND OUR SURROUNDING ENVIRONMENT. THE SAFE OPERATION OF SRP REACTORS FOR NEARLY TWENTY NINE YEARS HAS SERVED TO REFORTIFIED OUR TRUST AND CONFIDENCE IN THE ABILITY OF THOSE MEN AND WOMEN WHO WORK AT THE PLANT. THE MEN AND WOMEN WHO WORK AT SRP ARE ORDINARY PEOPLE AND MANY OF THEM ARE OUR FRIENDS AND RELATIVES. THEY ARE DOING AN EXTRAORDINARY JOB IN THE AREA OF ON-THE-JOB SAFETY PERFORMANCE.

FURTHERMORE, SAVANNAH RIVER PLANT LEADS THE NATION,AND PROBABLY THE ENTIRE WORLD, IN ITS SAFETY PERFORMANCE. SRP HAS NOT EXPERIENCED A SINGLE LOST WORKDAY CASE PER 200,000 HOURS EXPOSURE IN ITS OERATING HISTORY. THIS OUTSTANDING SAFETY PERFORMANCE IS IMPOSSIBLE TO ACHIEVE BY MERE LUCK. IN OUR VIEW, THIS OUTSTANDING SAFETY RECORD CLEARLY INDICATES THAT SRP OFFICIALS ARE COMMITTED TO THE SAFETY OF THEIR WORKERS, THE GENERAL PUBLIC AND THE ENVIRONMENT.

SRP MANAGEMENT IS EQUALLY COMMITED IN ITS EFFORTS, NOT ONLY TO MINIMIZE INDIVIDUAL WORKERS RADIATION EXPOSURE, BUT TO THE GENERAL POPULATION AND SURROUNDING ENVIRONMENT AS WELL. INDIVIDUAL RADIATION EXPOSURE A WORKER RECEIVES IS WELL BELOW THE FEDERAL GUIDELINE. A TYPICAL WORKER AT SRP RECEIVES LESS THAN ONE-FIFTH OF THE ESTABLISHED FEDERAL EXPOSURE LIMIT. RADIATION RELEASES TO THE ENVIRONMENT ARE WELL BELOW FEDERAL LIMITS.

IN OUR VIEW, ADEQUATE RADIATION EXPOSURE SAFEGUARDS ARE IN PLACE AND BEING MAINTAINED AT THE SAVANNAH RIVER PLANT. CONTINUAL ENVIRONMENTAL MONITORING, EVALUATION AND PROCESS IMPROVEMENTS HAVE ALL CONTRIBUTED TO SRP CONDUCTING ITS MISSIONS FOR THE UNITED STATES GOVERNMENT IN AN ENVIRONMENTALLY SOUND MANNER.

MR. CHAIRMAN, I WILL STATE FOR THE RECORD MY ASSOCIATION WITH THE SAVANNAH RIVER PLANT. I AM A NATIVE OF ALLENDALE AND HAVE LIVED THERE ALL OF MY LIFE EXCEPT FOR EIGHT YEARS IN THE UNITED STATES AIR FORCE. MY DIRECT ASSOCIATION WITH SAVANNAH RIVER PLANT GOES BACK TO MAY 1970 AND HAS CONTINUED TO THIS PRESENT DAY. I BELIEVE THIS EXPERIENCE HAS SERVED ONLY TO INCREASE MY CONFIDENCE IN THE COMPETENCE OF THE OPERATING ORGANIZATION AND IN ITS OVERRIDING COMMITMENT TO PROTECT THE SAFETY OF EMPLOYEES, THE PUBLIC AND THE ENVIRONMENT. THROUGH MY DIRECT ASSOCIATION WITH THE SAVANNAH RIVER PLANT, I HAVE FIRST HAND KNOWLEDGE OF ITS OUTSTANDING SAFETY PROGRAM EMPLOYED THERE. THROUGH THIS EXPERIENCE I FEEL IT IS SIGNIFICANT THAT THE SAFETY HISTORY OF SRP OPERATING REACTORS OVER THE PAST THREE DECADES JUSTIFIES THE RESTART OF L-REACTOR.

THE SAVANNAH RIVER PLANT IS ONE OF THE MOST WIDELY MONITORED SITES IN THIS COUNTRY. NO FACTS OR DATA HAVE BEEN REVEALED THROUGH THE MONITORING PROCESS TO INDICATE THE PLANT OPERATION POSES A DANGER TO THE PUBLIC AND THE ENVIRONMENT. THE ENVIRONMENTAL ASSESSMENT CARRIED OUT AT THE DIRECTION OF THE DEPARTMENT OF ENERGY AFFORDS FURTHER ASSURANCE THAT THE REACTIVATION OF L-REACTOR WILL NOT HAVE ANY SIGNIFICANT ENVIRONMENTAL IMPACT.

MR. CHAIRMAN, THE CITIZENS OF THE TOWN OF ALLENDALE HAVE COMPLETE TRUST AND CONFIDENCE IN THE CONTINUING SAFE OPERATION OF THE SAVANNAH RIVER PLANT. ON JANUARY 27, 1983 THE ALLENDALE TOWN COUNCIL ADOPTED A RESOLUTION IN SUPPORT OF RESTART OF L-REACTOR. A COPY OF THAT RESOLUTION IS HEREBY SUBMITTED FOR INCLUSION IN THE OFFICIAL RECORDS.

MR. CHAIRMAN, WE RESPECTIVELY REQUEST THAT THE PROPOSAL TO DELAY STARTUP OF L-REACTOR AREA BE REJECTED BECAUSE OF THE ADVERSE AFFECT SUCH A DELAY WILL HAVE ON THE NATION'S DEFENSE POSTURE AND ALSO BECAUSE OF THE NEEDLESS EXPENDITURE OF MILLIONS OF DOLLARS OF TAXPAYER'S MONEY THAT WOULD BE INVOLVED.

THANK YOU.

William Holmes

WILLIAM HOLMES
MAYOR, TOWN OF ALLENDALE

RESOLUTION IN SUPPORT
OF RE-START OF L-AREA
REACTOR AT THE
SAVANNAH RIVER PLANT

WHERE AS The restart of the L Reactor is vital to the National Defense and a Major Delay in restart could endanger our National Security: and

WHERE AS The L-Reactor operated safely from its initial start up in 1954 until it was shut down and placed on standby in 1968 : and

WHERE AS the impact of the L-Reactor operations on the streams of the Savannah River Plant and on the Savannah River has been demonstrated and the consequences are known to have had negiligible effects on human health and safety and had inflicted no permanent damage to the environment:

NOW THEREFORE BE IT RESOLVED by the Town Council for the Town of Allendale South Carolina that:

The Town Council urges the various governmental offices and agencies to prompt agreement so that the restart of the L-Reactor will not be delayed beyond its scheduled date.

WILLIAM HOLMES,MAYOR

ATTEST:

BRUCE A MCDOUGAN,CLERK

Adopted at a meeting of the Mayor and Council of the Town of Allendale,South Carolina.Held on the 27 day of January,1983 after giving notice to all interested parties.

WILLIAM HOLMES,MAYOR

COUNCILMEMBER

Olin Wood
COUNCILMEMBER

Edwin W Grier
COUNCILMEMBER

COUNCILMEMBER

Robert L. Smith
COUNCILMEMBER

COUNCILMEMBER

Enclosure No. 42

STATEMENT OF THE SOUTH CAROLINA WATER RESOURCES COMMISSION BEFORE THE SENATE ARMED SERVICES COMMITTEE, NORTH AUGUSTA, SOUTH CAROLINA, FEBRUARY 9, 1983

The South Carolina Water Resources Commission appreciates the opportunity to present the Armed Services Committee a Statement, concerning reactivation of the L-Reactor at the Department of Energy's Savannah River Plant, Aiken, South Carolina.

In the July 14, 1982, [edition] of the Federal Register, the United States Department of Energy (hereinafter DOE), announced plans for reactivation of the L-Reactor at its Savannah River Plant, Aiken, South Carolina. In that notice, DOE for the first time invited public comments on the proposed reactivation; however, as clearly indicated in the notice, the public was accorded only 15 days to present comments. Obviously, this time period was even shorter, considering the time necessary to receive the Federal Register notice through the mail and return comments by the stated date. Thereafter, on August 23, 1982, DOE published a notice in the Federal Register of a finding of no significant impact as to the reactivation of the L-Reactor. DOE announced that its finding was based upon evaluation of the project in an environmental assessment (DOE/EA-0195). Based upon the two (2) aforementioned notices, neither the Water Resources Commission nor the public generally have been accorded a reasonable opportunity to review the proposed reactivation of the L-Reactor and provide comments to DOE. The general position of the Water Resources Commission is that the proposed reactivation is of such significant scope that all interested governmental agencies and persons should be accorded a meaningful opportunity to review and comment on the project.

In reponse to a request from the State Budget and Control Board, the Water Reosurces Commission has participated in a task force of State agencies to review the proposed reactivation of L-Reactor in order to formulate a unified state position with regard to this matter. As a result of inquiry into this matter, a resolution was presented to and adopted by the Commission at its meeting of December 8, 1982, which resolution states as follows:

> Resolved that the Water Resources Commission instruct its Director to represent the following position at the task force of affected agencies. This position is that the Department of Energy in restarting the L-Reactor should follow all the State and Federal permitting procedures including investigating the need for an environmental impact statement as if it were a private industry. The State Budget and Control Board should consider enforcing the position of this Commission by all legal means available to it including intervention in the present Federal litigation.

This resolution was adopted by unanimous vote of the Commission. Based upon this directive the Commission resprentative on the State task force supported the following agreement which was reached by the members of the task force. The agreement is as follows:

(1) The State of South Carolina has important legal and regulatory responsibilities with respect to the proposed reactivation of the L-Reactor by the United States Department of Energy at the Savannah River Plant;

(2) It is and should be the policy of the State and its regulatory agencies to require governmental actions affecting South Carolina's natural, human and cultural resources to meet the same standards of environmental protection as would be required of actions by private industry or enterprise having an equivalent effect on the environment;

(3) That the State and its agencies feel that it is essential to take appropriate steps to assure that all State and Federal regulatory and permitting procedures are followed with respect to the proposed reactivation of the L-Reactor;

(4) In order to assure that the interest of South Carolina will be adequately and properly protected with respect to the proposed reactivation of the L-Reactor, the State should institute an independent legal action to assure compliance with the law by the Department of Energy;

(5) It is in the interest of South Carolina for the responsible State agencies to take a unified position in any litigation concerning the L-Reactor.

IT IS THEREFORE RECOMMENDED that the State Budget and Control Board request the Attorney General to review the matter, and report back to the Budget and Control Board, the appropriate action to assure protection of South Carolina's natural, human, and cultural resources and the integrity of the States governmental and regulatory processes. *

In summary, the Water Resources Commission firmly believes that the proposed reactivation of L-Reactor, along with its interrelationship with existing activities at the Savannah River Plant, warrants a thorough and extensive environmental assessment, followed by a meaningful opportunity by interested governmental agencies and the public generally to review the proposed project and make comments thereon.

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* The Commission is informed that the Attorney General has moved to intervene in a civil action filed in the Federal District Court for the District of Columbia, which seeks an order requiring DOE to prepare an Environmental Impact Statement.

The South Carolina Water Resources Commission is authorized by State law to investigate, analyze, and make recommendations to the Governor and General Assembly with regard to any aspect of water use within the State of South Carolina. As such, the Commission is concerned that the environmental assessement (DOE/EA-0195), issued by the DOE in August, 1982, does not adequately consider the potential impacts of the reactivation of the L-Reactor upon the surface and ground water resources within the area surrounding the Savannah River Plant, specifically, and the entire Savannah River watershed generally. Of particular concern is the failure of the environmental assessment to consider the full impact of reactivation of L-Reactor with regard to projected demand and availability of water along the entire Savannah River.

The environmental assessment fails to address the relationship of reactor cooling water usage (for all SRP operations) and other current and projected water use needs throughout the Savannah River Basin. This is of particular concern, because both the States of South Carolina and Georgia are currently pursuing the possibility of making available for general public use some percentage of the waters in the Upper Savannah River. These waters are or will be entirely contained within federally owned and controlled reservoirs, which currently restrict availability for general public uses. Further, the environmental assessment does not consider the potential effect of interbasin transfers of large amounts of water from the Upper Savannah River watershed. Construction is already underway for at least one substantial interbasin transfer of water.

The environmental assessment indicates that the entire Savannah River Plant operation (including reactivation of L-Reactor) will use approximately 13 percent of the average flow and 22 percent of the seven day, 10 year low flow (7Q10) of the Savannah River. This estimate uitlizes an average Savannah River flow of 10,000 cubic feet per second (cfs) and a 7Q10 flow of 5,800 cfs. However, historical and recent streamflows have occurred that were considerably lower than the 7Q10 level. During 1981, a low rainfall year, a number of daily streamflow rates in the vicinity of the Savannah River Plant water intake were less than the 7Q10 flow. Also, the environmental assessment contains no discussion of the consumptive loss of water from the Savannah River Basin due to L-Reactor operation or other Savannah River Plant activities. Given the large volume of water used at the Plant for reactor cooling, consumptive loss due to evaporation could be significant. This water would be unavailable to downstream water users.

Another major deficiency in the environmental assessment involves consideration of potential effects upon ground water. The assessment has a good description of the ground water resources in the area of the Savannah River Plant; moreover, at page 4-32 the assessment candidly concedes that pollutants originating from activities at the plant have entered the shallow ground water system. The ground water contamination results from pollutants held in seepage basins, and the assessment indicates that reactivation of the L-Reactor will result in a substantial increase in estimated incremental releases to the seepage basins. Further, the assessment indicates that a certain portion of contaminated water will ultimately be released into surface streams. In its description of ground water quality in the area, the assessment clearly indicates that shallow aquifers yield sufficient water for domestic use. The shallow aquifers appear to be the same ones that are currently contaminated by pollutants from the seepage basins; however, the environmental assessment contains no details as to potential contamination of ground water used for domestic purposes. While the environmental assessment concedes that some polluted ground water may make its way into surface water courses on or adjacent to the Savannah River Plant, the assessment does not consider the possiblity of ground water contamination from contaminated surface water sources. Admittedly, the projected cooling water discharge from L-Reactor into Steel Creek will contain radioactive elements or will cause radioactive elements within the sediments in Steel Creek to be released into the creek and ultimately the Savannah River. No consideration is given in the assessment whether these elements may utimately end up in ground water, especially during periods of drought and lowflows in the Savannah River.

The Environmental Assessment emphasizes the impact of reactivation within the plant site but provides insufficient analyses of effects off-site where all of the same aquifers are now being utilized and where they will be utilized to a greater extent in the future. A more precise evaluation of this potential along with the installation of monitoring wells in intervening areas appears beneficial.

The ion exchange capacities illustrated in Figure 3-9 show an incorrect source (Langley & Marter); it should be (Siple, G.E., USGS-WSP-1841). Fig 3-7 identifies the differential in head among the Barnwell - McBean, Ellenton and Tuscaloosa aquifers and, thus, should reflect conditions applicable to the F-H seepage basins. On p. 483 it is stated that a drawdown hydraulic gradient exists from the contaminants reaching the Congaree formation would be restricted to that formation due to the higher hydrostatic pressure in the underlying Ellenton and Tuscaloosa formations. However, this barrier appears to be rather tenuous, considering the indicated 1 to 2 meters head differential between the Congaree and the Ellenton or Tuscaloosa formations. Considering this small differential, which is subject to change as a result of several dynamic conditions, to what extent can it be considered a rigorous barrier to possible contamination in either a lateral or vertical direction? Some discussion is given with regard to future pumpage from aquifers on the east and southeast sides of the Savannah River Plant, but it would seem desirable to define more precisely the potential effects of heavy pumpage from either the Tuscaloosa and Ellenton formations or the McBean and Congaree formations in areas contiguous to the plant boundary. At slightly farther distances there has been a large increase in pumpage from these aquifers for irrigational purposes. These practices could be initiated in areas closer to the SRP and, thus, have a more pronounced effect on head distribution within the site.

On p. 4-51 the Assessment states that wells will monitor pollutant transport in the ground water around the L-Reactor area seepage basin. But paragraph 4.2.1.2. on p. 4-32 seems to indicate that the liquid wastes from L-Reactor will be discharged into the F-H area seepage basins. If there is discharge to seepage basins in the vicinity of the L area, then the head distribution shown in Fig. 3-7 might not be valid, and in fact would have to be subject to some variation.

Also, at page 4-51, the environmental assessment states, "Permanent wells will be established to monitor pollutant loads and transport in the ground water area around the L-Reactor area seepage basins." This is certainly a constructive idea; however, the assessment is entirely silent as to what DOE may or can do to abate contaminated ground water once it is discovered. This is a fundamental flaw in the assessment, and one that cannot be overlooked.

Finally, in determining that the reactivation of L-Reactor will not have a significant impact on the environment, DOE appears to be comparing the expected impacts of L-Reactor operation with those experienced during the 1954-1968 period of operation. It is obvious from data presented in the assessment that important adverse impacts did occur during the 1954-1968 period, and that many of these impacts would recur after reactivation of L-Reactor. We concur that there would not be significant difference between 1954-1968 impacts and post-reactivation impacts, however, we feel that this is not the issue in question. The only way to appropriately address L-Reactor operation impacts is to compare those impacts with environmental conditions existing prior to 1954. We do not feel that this comparison is adequately addressed in the environmental assessment.

Enclosure No. 43

The Georgia Conservancy

3110 MAPLE DR., SUITE 407 ATLANTA, GEORGIA 30305 TELEPHONE: 404/262-1967

TESTIMONY BEFORE THE SENATE
ARMED SERVICES COMMITTEE'S PUBLIC HEARING ON
THE REACTIVATION OF THE L-REACTOR BY
G. ROBERT KERR AND HANS NEUHAUSER OF
THE GEORGIA CONSERVANCY
FEBRUARY 9, 1983

Mr. Chairman, I am G. Robert Kerr, Executive Director of The Georgia Conservancy. I am accompanied today by Hans Neuhauser, the Conservancy's Coastal Director from Savannah. We appreciate the opportunity to present testimony on the environmental consequences of the restart of the Department of Energy (DOE)'s L-Reactor at the Savannah River Plant. This testimony is being presented on behalf of The Georgia Conservancy, a statewide citizen's membership organization whose goals are to maintain and improve the quality of the environment in and as it affects Georgia. In achieving these goals, The Georgia Conservancy encourages the wise use of the state's natural resources and works toward finding a balance between the needs of the state's economy, the social and cultural needs of its people and the vital functions of our natural systems. The Georgia Conservancy's membership is statewide and numbers over 3,000 individuals, families, groups and businesses. Our members will be directly affected by the reactivation of the L-Reactor.

As an organization, The Georgia Conservancy is very conservative. We view litigation only as a last resort, preferring to discuss, negotiate and persuade. Yet, in spite of our reluctance, we find ourselves involved in this litigation. In consort with the Natural Resources Defense Council, the Leagues of Women Voters of both Georgia and South Carolina and numerous others, we are attempting to require DOE to prepare a comprehensive Environmental Impact Statement (EIS) on the reactivation of the L-Reactor. Why? Because we feel that DOE's Environmental Assessment does not fully address the issues and that an EIS is required by law. We all believe an EIS that adequately addresses the important issues will focus public attention on whether DOE's present plan is either as safe or as environmentally benign as it should be.

The DOE refuses to produce an EIS on the basis of an interpretation of the Department of Energy National Security and Military Application of Nuclear Energy Authority Act of 1982 ("1982 Act"). This "1982 Act" denies the expenditure of funds for the preparation of EIS's, "... with respect to the operation of any defense facility of the Department of Energy unless the preparation of such statement is required by statute" (emphasis added).

First, we contend that an EIS is required by statute. The National Environmental Policy Act of 1969 (NEPA) requires that Environmental Impact Statements be prepared on major Federal actions significantly affecting the quality of the environment. The DOE's refusal to comply with the law centers on their interpretation of what is "significant". By using several examples of what other Federal agencies consider "significant", we can demonstrate that DOE's interpretation is highly unorthodox and inappropriate.

At Kings Bay, Georgia, where the U.S. Navy is constructing the east coast base for the Trident nuclear submarines, not only one but two EIS's were prepared to assess the impacts. The most significant environmental impact at Kings Bay was the destruction of 36 acres of wetlands and the Navy wrote two EIS's. The reactivation of the L-Reactor will cause the destruction of at least 1,000 acres of wetlands, and yet DOE sees this as insignificant.

In Savannah, the minor enlargement of a small boat marina involving less than a million dollars prompted the U.S. Army Corps of Engineers to prepare an EIS. DOE refuses to prepare an EIS for a facility requiring an outlay of some $214 million. As they say on the television series, that's incredible!

The "1982 Act" also does not pertain here because it refers to operating facilities. The L-Reactor is not an operating facility; it has been closed since July 1968, and by DOE's own admission has had "no maintenance performed" in twelve years. It will also take some $214 million to restart. By no stretch of the imagination can one consider the L-Reactor to be operational now.

The assurances advanced by DOE that the L-Reactor will be safe have met with an unprecedented level of scepticism from a wide variety of interests in South Carolina, Georgia and elsewhere. Evidence of this scepticism is present at this hearing today and in letters from elected officials to the DOE and editorials in area newspapers, including letters from the former Governor of Georgia, George Busbee, and the Mayor of Savannah, John Rousakis, and editorials in The Atlanta Constitution, The Savannah Morning News and The Georgia Gazette.

The safety of DOE's nuclear facilities has also been seriously questioned in a recent report of the General Accounting Office (GAO) entitled "Better Oversight Needed for Safety and Health Activities at DOE's Nuclear Facilities" (GAO Report No. EMD-81-108; August 4, 1981). Among the many points raised in the GAO report was the following:

> "Major changes are required in the safety and health oversight program at the Department of Energy's contractor-operated nuclear facilities to insure that safety, health and environmental standards are met. This responsibility falls to the operating contractors, which are also responsible for meeting production or program objectives. As a result, safety and health concerns must often compete with program goals."

The risks are too high - to our health, to our safety, to our ground and surface waters on which we are so dependent, and to our other natural resources - to permit us to accept the biased assurances of DOE that everything is fine. We need an EIS if for no other reason than to provide an accurate portrayal of the risks, and to allay those fears that are unfounded.

If done properly, the EIS will go beyond the contents of the Environmental Assessment in revealing ways of making the L-Reactor safer for the people who work there, safer for the citizens of South Carolina and Georgia who live downwind and in some cases downstream from the L-Reactor, and less damaging and threatening to the environment. Damage and risks to the environment range from the impacts on Steel Creek and its inhabitants into which scalding-hot water will be discharged to the quality and integrity of the Tuscaloosa Aquifer and the Savannah River upon which the citizens and economy of our region are so dependent.

A comprehensive EIS should go beyond the Environmental Assessment in providing for full disclosure of non-security related information. It should evaluate risks, damage, safety (including evacuation procedures and emergency preparedness), costs, benefit, environmental consequences, time requirements, health impacts and other important issues. It should seek to resolve conflicting data, such as those presented by scientists at the Savannah River Ecological Laboratory or in the report by Patterson Associates to the Beaufort/Jasper Water Authority. (For example: the DOE's Environmental Assessment claims only 1,000 acres of wetlands will be destroyed; and Patterson's report estimates that it could be as high as 28,000 acres.) It should clearly describe the double standard under which nuclear facilities operate: governmental regulations require that commercial nuclear power plants be much more strictly controlled than the government's own facility at the Savannah River Plant.

A comprehensive EIS should also go beyond the Environmental Assessment in providing a realistic set of alternatives. The DOE's Environmental Assessment claims that the only alternative to the proposed restart is no action. We contend that there are logical, feasible and prudent alternatives to the present plan. Among the alternatives that should be discussed are: (1) the installation of a containment dome, (2) the construction of cooling towers or other devices to reduce the temperature of the hot water discharge, and (3) the adoption of new inspection procedures involving personnel who are operating independent of DOE's production goals.

Commercial nuclear power plants are required to have secondary containment domes to reduce the risk of release of high levels of radioactive materials in the event of an accident. The containment dome at the Three Mile Island Plant prevented the accident there from being worse than it was. The L-Reactor does not have a secondary containment dome and the DOE does not plan to install one as part of the overhaul.

Commercial nuclear power plants are required to use cooling towers, settling ponds or other devices to reduce the temperature of their wastewater discharge to close to natural conditions. None of these are planned for the L-Reactor, so some 176,000 gallons of approximately 175 degree water will be released each minute into Steel Creek, a tributary of the Savannah River.

Commercial nuclear power plants are continuously inspected by officials from the Nuclear Regulatory Commission. These officials have the authority to stop the plant's operation if they suspect unsafe conditions. The Nuclear Regulatory Commission does not inspect the L-Reactor; only in-house DOE inspectors with questionable independence and objectivity will be used. The need for independent controls is evidenced by the land and water contamination existing from past operations of Savannah River Plant facilities. The L-Reactor is also exempt from Occupational Safety and Health Administration safety and health regulations and oversight.

Once these and other alternatives have been identified and their relative merits discussed, the Administration, the Congress and the public will be able to critically review, select and advocate the most appropriate alternatives. We would hope that the alternative selected for implementation is the one that is safest for all concerned and the one that presents the least risk to our natural resources.

We ask today that the Senate Armed Services Committee initiate the process that will result in the insistence that the Department of Energy prepare an EIS on the L-Reactor: an EIS that addresses the pertinent issues, that provides full disclosure of non-security related information, that fairly and thoroughly evaluates alternatives and that provides an opportunity for decision-makers to select the most prudent course of action. We hope that the chosen action will be safer and less environmentally damaging than the present site.

We also ask you, Senator Thurmond and Senator Mattingly, to personally advise President Reagan to order DOE to do an EIS. If these steps are taken, and DOE commences on an EIS, then the lengthy and costly delays that the present litigation will likely engender would be eliminated. By your intervention, Senators, you can resolve the issue before even more delays are necessary and thus expedite the reactivation of the L-Reactor. At the same time, you will be providing adequate assurances to the public and particularly the citizens of South Carolina and Georgia that the safest course of action will be taken.

In conclusion then, The Georgia Conservancy is not presently seeking to delay or to prevent the reactivation of the L-Reactor. We are seeking to determine if it can be safely operated and what are the less environmentally damaging alternatives. By directing DOE to conduct an EIS, the Congress will be taking the first major step in the process of achieving the same goals. Should the DOE continue to refuse to respond to the concerns raised here, further delays brought about as a result of litigation or by specific Congressional action can then be attributed to the incredible arrogance of DOE in ignoring precedents that clearly define this project as one meeting NEPA requirements for an EIS.

Thank you, Senators, for holding this public hearing and for providing us with the opportunity to present testimony. We will be glad to respond to any questions you might have.

Enclosure No. 44

Edward J. Carlough
General President

SHEET
METAL
WORKERS'
INTERNATIONAL
ASSOCIATION

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January 26, 1983

The Honorable Strom Thurmond, USS
U.S. Senate Committee on Armed Services
212 Russell Senate Office Building
Washington, D.C. 20510

Dear Senator Thurmond:

As president of the Sheet Metal Workers' International Association, a labor union-representing more than 160,000 building tradesmen, I am pleased to present testimony to your distinguished committee in support of the proposed resumption of the L-Reactor at the Savannah River Plant in southwestern South Carolina.

BACKGROUND

Construction of a facility to produce materials, primarily plutonium and tritium, for nuclear weapons, was begun by the Atomic Energy Commission in February, 1951. The first of five nuclear reactors began operation in December, 1953. By March, 1955, five production reactors were producing materials required for the nation's nuclear arsenal.

The five reactors continued in full operation through 1968. During that period, the reactors maintained an excellent safety and environmental record.

In 1968, two of the reactors — the L & R Reactors — were placed on standby status due to the decreasing demands for defense-related nuclear materials. The remaining three reactors have operated continuously during the ensuing years.

PROPOSED ACTION

The proposed restart of the L-Reactor is required to help attain the levels of nuclear materials for defense purposes which have been proposed by the Reagan Administration.

Failure to resume operations at the L-Reactor would not satisfy the long-range national defense requirements deemed necessary by the present Administration.

The L-Reactor at the Savannah River Plant could resume normal production operations in October of this year with approval from the Congress.

A favorable decision from this Committee regarding the restart of the L-Reactor would be in the best interests of the nation and its national defense structure. We, as a union vitally concerned with the nation's defense needs, would recommend such action and we hope that the Congress will see fit to act accordingly.

CONCERNS VOICED REGARDING RESTART OF THE L-REACTOR

The most frequent concern expressed regarding resumption of operations of the L-Reactor at the Savannah River Plant deal with the reactor's impact on the surrounding environment.

The U.S. Department of Energy has concluded that a restart of the reactor would pose no environmental threat to the local environment. Specifically, the Department has noted that the environmental "impacts resulting from the resumption of the L-Reactor operation should not be significant."

Another oft-stated concern involves the issue of safety. The latest safety precautions and techniques must always be practiced in any type of operation involving nuclear reactors, be it for defense purposes or for domestic energy purposes.

However, it must be pointed out that the safety record of the L-Reactor during its operation between 1954 and 1968 was a sparkling one in every respect. During those 14 years, no reactor accidents occured which resulted in the release of radioactivity to the public. The chances of such accidents are even more unlikely today as a result of greatly improved safety systems and regulations for the operation of a nuclear reactor.

THE JOBS FACTOR

Projections from the Department of Energy indicate that a resumption of L-Reactor operations will result in 400 direct and indirect job opportunities. In these depressed economic times we need not remind the Committee of the importance attached to programs which produce new jbos.

The new jobs which will accrue from the restart of the L-Reactor will produce approximately $25 million in direct and indirect annual incomes and about $3 million in direct expenditures on materials and services for the communities adjacent to the Savannah River Plant.

CONCLUSION

Allow me to again express the support of the Sheet Metal Workers' International Association for the proposal to resume operations of the L-Reactor at the Savannah River Plant in South Carolina. Such a restart will:

- * Produce necessary components to satisfy future national defense goals;
- * Act as an economic stimulus to the economies of communities which are adjacent to the Savannah River Plant;
- * Feature the most up-to-date and stringent safety standards within the nuclear industry;
- * Pose no environmental threat to the local environment.

For all of these reasons, our union would urge the Committee to act favorably and promptly on the proposal to resume operations of the L-Reactor at the Savannah River Plant.

We are most appreciative of the Committee's consideration of our views on this important subject.

Sincerely,

Edward J Carlough

Edward J. Carlough, President
Sheet Metal Workers' International
Association

EJC/ets

Enclosure No. 45

Testimony of
Tom Clements, co-coordinator
Athenians for Clean Energy
P.O. Box 47
Athens, Georgia 30603

at the
Public Hearing
of the
Senate Armed Services Committee
Environmental Problems of the L-Reactor Start-up

Februrary 9, 1983
North Augusta Senior High School
North Augusta, South Carolina

My name is Tom Clements and I am a resident of Athens, Georgia. I am co-cordinator of a citizen group called Athenians for Clean Energy, and I am testifying on behalf of that group and other individuals in the Athens area who feel that an Environmental Impact Statement should be prepared regarding the start-up ofthe L-Reactor at the Savannah River Plant. We feel that there is Significant Impact from the L-Reactor start-up, and that work on the reactor must cease until a full Environmental Impact Statement is prepared.

I will address four areas of concern regarding the L-Reactor. These concerns are as follows:

1) Cumulative effect of thermal discharge to the Savannah River;
2) Cesium buildup in the Savannah River;
3) Radiation releases from L-Reactor's associated facilities;
4) Need for study of the "No-Action" alternative.

Thermal Effects

There are indications in the Environmental Assessment that there is much unknown about the effect of thermal discharges, especially cumulative effects from all discharge sources, on the Savannah River.

An oversite in the Environmental Assessment regarding thermal discharge is that there is no discussion of effects to aquatic life in case of rapid shut-down or start-up of the L-Reactor. With rapid shut-down comes a sudden drop in water temperature; with start-up comes a a sudden rise in temperature. No evaluation is made as to effects on river biota with these rapid temperature fluctuations, especially if they come during critical periods, such as during migration or spawning of fish, or during natural extremes of temperature in summer or winter when biotic systems may already be under stress.

On page 4-13, under Ecological Impacts, the Environmental Assessment states that the heat discharge from the L-Reactor will have no adverse impact on downstream reptiles, birds, or mammals and that migrating fish will be able to pass by the thermal plume. It is not clear if the cumulative thermal discharges from the L-Reactor and other operating reactors are considered in this determination. Does the determination that there will be a zone of passage for fish take into account what is stated on page 4-48 of the E.A.?: that "the thermal plumes in the Savannah River from Beaver Dam Creek, Four Mile Creek, and Steel Creek will not interact with each other." It is stated throughout the Environmental Assessment that complete mixing has occured at a point 2.4 km. downstream, yet distinct and/or changing plume characteristics are not discussed. Is this a critical zone for river life?

There is also no discussion in the Environmental Assessment about life-critical temperatures of various impacted organisms. On page 3-10, in Table 3-2, a summary is shown giving the number of days maximum temperature of the Savannah River above the Savannah River Plant "equaled or exceeded upper water temperature limits." Are these temperatures, coupled with an increase caused by SRP thermal discharge, approaching critical temperatures for any river life?

Cesium Buildup

Radiocesium transport from Steel Creek to the Savannah River and downstream may cause problems overlooked in the Environmental Assessment. As stated in Section 2.2.8 (page 2-12) of the Environmental Assessment: "particulate matter in the basin water tends to agglomerate or adsorb radioisotopes." Again in Section 3.7.2.1 (page 3-43) it is stated that ther is a "strong affinity of cesium-137 for the sediments in the Steel Creek system." All of the remobilized radiocesium from Steel Creek is assumed in the Environmental Assessment to reach the Savannah River (page 4-22).

Although many of these particles may remain suspended in the Savannah River, they may also be deposited in the river "where the river velocity and turbulence are low." (E.A., page 3-44) These places of possible deposition downstream are not mentioed in the Environmental Assessment. Could there possibly be hot spots in which cesium will accumulate, or is already accumulating?

The Savannah River Ecology Lab report entitled "An Evaluation of the Steel Creek Ecosystem in Relation to the Proposed Restart of the L-Reactor: Interim Report" examines techniques to determine radioisotope buildup:

> Numerous approaches are available for estimating the inventory of gamma emitting radionuclides in the environment. Aerial and ground radiological surveys, both of which monitor exposure rates, are often performed to asses radionuclide inventories. Both of these techniques, however, average point-source exposure rates over relatively large areas and, as a consequence, cannot provide information pertaining to microgeographical variation in contamination. Where spatial heterogeneity in radionuclide concentrations is unpredictable and extreme, inventory estimates based solely on radiological monitoring may be quanitatively imprecise and qualitatively biased. (pages VII-1,2)

There is no mention in the Environmental Assessment if any surveys of this type were made of the Savannah River. Such surveys are a starting point at a minimum, and as implied, extensive radionuclide inventories may reveal radionuclide buildup where levels were previously determined to be low. It is essential that an E.I.S. be prepared to determine if there are hot spots and what the ramifications of them are if they are found.

Incremental Radiation Releases

The Environmental Assessment clearly points out that radioactive releases from support facilities will increase if the L-Reactor begins operation. "The resumption of the L-Reactor will result in an increase of about 35 percent of radioactive discharges from support facilities..." (Section 4.2.2.1, page 4-37) "The restart and operation of the L-Reactor will increase the release of radionuclides to the atmosphere from the seperation, fuel fabrication, and heavy-water rework areas." (Section 4.2.2.1, page4-37)

Radionuclide releases, as shown in the Environmental Assessment (pages 4-38,-40), total thousands of curies yearly, representing over two dozen different radioisotopes. Maximum individual and population dose commitments from these releases are discussed in the Environmental Assessment in barely more than one page (pages 4-42,-43). With the briefest of study, the danger of these releases is dismissed. A full E.I.S. is needed to accurately determine the actual effects of such large radioactive releases.

Need to Study No-Action Alternative

Neither the Office of the President nor the Department of Energy has established a need for the additional plutonium and tritium which would be produced from the L-Reactor. The "No-Action" alternative is not discussed in the Environmental Assessment, but it may well be the best alternative, not only from an economic and environmental point of view, but also from a defense and national security point of view.

The nuclear arms race, currently out of control, must be halted. Production of more nuclear weapons material will only serve to make the threat of nuclear war greater and will heighten world tension. Peoplearound the country are awakening to the unstable situation that is being fueled by our government, and are calling for a freeze on nuclear weapons production. A freeze and subsequent reduction in nuclear stockpiles appears to be the safest and sanest way to insure peace.

The restart of the L-Reactor will be a key ingredient in the continuation of the arms race. It is therefore imperative that an Environmental Impact Statement be prepared which fully examines the "No-Action" alternative.

This testimony is respectfully submitted.

Tom Clements

Enclosure No. 46

SAVANNAH AREA
CHAMBER OF COMMERCE

TESTIMONY BEFORE THE SENATE ARMED SERVICES COMMITTEE
PUBLIC HEARING ON REACTIVATION OF "L" REACTOR AT THE SAVANNAH RIVER PLANT

BY KEN MATTHEWS
FOR THE SAVANNAH AREA CHAMBER OF COMMERCE

FEBRUARY 9, 1983

Mr. Chairman, I am Ken Matthews, a member of the Natural Resources and Energy Management Committee of the Savannah Area Chamber of Commerce. On behalf of our organization, I want to thank you for this opportunity to present our point of view on the Department of Energy's proposed restart of the "L" Reactor at the Savannah River Plant near Aiken, South Carolina.

The Savannah Area Chamber of Commerce is a business organization founded in 1803 that represents over 1300 businesses in the community. Our primary emphasis is on economic development with additional concern for the quality of life that makes Savannah an attractive environment for our current residents as well as an incentive for attracting new business and industry to the area.

The Chamber has grave concerns over the Department of Energy's plans for reactivation and expansion of facilities at the Savannah River Plant. Since our community is 88 miles downriver and downwind

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from the Savannah River Plant, we fear that our air and water quality may be adversely affected by the "L" Reactor restart. Consequently, we believe that a full Environmental Impact Statement is in order regarding the "L" Reactor, taking into account the cumulative effects of the present and proposed facilities at the Savannah River Plant as well as those of contiguous operations such as Georgia Power Company's Plant Vogtle and the Allied General Nuclear Processing Facility in Barnwell, South Carolina.

The Chamber also opposes any additional plant expansions until such time as more effective control of radioactive substances has been demonstrated for the existing facilities. We have a further concern that there is a double standard applied to those projects of the U.S. Department of Energy as opposed to those carried out by the private sector. Our concern is that the Department of Energy's standards are not comparable to those of the Nuclear Regulatory Commission, nor are they subject to the independent review of that agency.

We continue to be unalterably opposed to bedrock storage of high-level radioactive wastes at SRP, fearing groundwater contamination. However, as the Savannah area's groundwater supply becomes more scarce through increased demand, we believe that the community will be forced to rely to a much greater extent on the resources of the Savannah River for potable drinking water as well as for industrial usage. We therefore feel that a thorough Environmental Impact

Statement is necessary to allay the health and public safety concerns that could affect our community's ability to grow and prosper.

While we recognize and fully support the interests of the United States Government with regard to national defense, we nonetheless feel that nuclear development in and around the Savannah River Plant should not be expanded further without very thoughtful analysis of environmental impact and sensitivity to potential effects on the communities and people of the Savannah River basin.

We thank the members of the Senate Armed Services Committee for this opportunity to present our views, and we ask that you join us in calling for a comprehensive Environmental Impact Statement on these concerns.

/dbh

Enclosure No. 47

Senate Armed Services Committee

Public Hearing

Environmental Concerns of L-Reactor Operation

Testimony

J.Y. Shorthouse, Spokesperson
Georgians Against Nuclear Energy
P.O. Box 8574, Station F
Atlanta, Ga. 30306

February 9, 1983
North Augusta Senior High School
North Augusta, South Carolina

My name is Jeanne Shorthouse, and I am representing the Georgians Against Nuclear Energy. Thank you for the opportunity to testify.

For someone untrained in interpreting detailed radiation doses and thermal effects on the environment, wading through the Environmental Assessment of the L-Reactor was no easy task. Our comments today are of a general nature, a gut response to that assessment.

We have a basic mistrust of the assessment for conflict-of-interest reasons. Why should someone trust a study done by the Department of Energy for the Department of Energy? We have in most other areas of our lives had to build in safeguards to protect people from conflict-of-interest situations, and for good reason. We don't let our utilities regulate themselves; our elected officials are supposed to disquality themselves from decisions where it would personally benefit them; and we learned the hard way during the Atomic Energy Commission Era, that they couldn't be trusted to both honestly promote nuclear energy and safely regulate it.

There were times while reading the assessment that I had to stop and remind myself of what I was reading: The Department of Energy's study of past and future problems of L-Reactor. The conclusion: A thousand acres of wetlands converted back to 1968 thermal desolation, but not irreversibly impacted; and a few baby alligators, with assurance the alligator situation is still being studied. With some knowledge of the extremely heavy industry that functions at the Savannah River Plant the conclusions you reach, on almost negative environmental damage, is highly suspect. We fear you have taken one small part of a very large operation without considering the cumulative effects of the whole. Since the Savannah River Plant is almost entirely drained by the Savannah River, a major drainage network in the S.E. United States, we feel a total plant EIS should be conducted. One that pretains only to the L-Reactor or just waste storage does not give a total picture.

Our understanding of the once-through cooling-water option has no alternative because it's based on limitations of time and money layed out in a Presidential-Mandate of more nuclear materials by Nov. 1983. Such considerations as cooling towers, secondary containment domes or a full EIS would require too much time and money. What that says to us is cost and time are more important than health and safety. Even if you believe the publics' fears are only in their heads, that's a serious public relations problem that will not go away. The Nuclear Industry has created for itself a reputation built on secrecy and lies under the guise of "national security". This is not exactly a solid base for public trust.

The Environmental Assessment does not adequately prove the need for more nuclear materials, the reason given for starting up the L-Reactor. We don't feel they are needed for "national security". Our Governments' nuclear weapons program, once thought to produce security, now breeds massive insecurity. The nuclear arms race, for which these nuclear materials are being produced, is clearly not the road to a nation secure.

The most critical problems we face today, soaring unemployment, high interest rates, constant inflation, and an energy crisis remain unresolved, while billions of dollars are wasted on military spending. Dollars spent on weapons systems create far fewer jobs than those spent on civilian projects. In fact, they contribute to unemployment by robbing other job-generating programs of needed funds.

In conclusion, we suggest you listen to what the majority of the American people are saying. They are asking for a U.S./Soviet freeze on the production, testing and deployment of nuclear weapons and nuclear weapon delivery systems. Our present policy is teaching our children that terrorism is an acceptable way to resolve problems. By your own definition, "balance of terror", has become an acceptable American/Soviet solution. We suggest you begin the civilized process of resolving problems by serious negotiation.

Our suggestions are not offered as simple ones. We are well aware of their complexity, but offer them as a beginning to getting back to human values of which we can be proud.

Don't start the L-Reactor, cease making more nuclear materials and open up serious dialogue with the Soviet Union.

Enclosure No. 48

COASTAL CITIZENS for CLEAN ENERGY
4405 paulsen street savannah ga 31405

TESTIMONY BEFORE THE SENATE
ARMED SERVICES COMMITTEE
ON THE L-REACTOR

BY REBECCA R. SHORTLAND
FOR COASTAL CITIZENS FOR CLEAN ENERGY
FEBRUARY 9, 1983

On behalf of Coastal Citizens for Clean Energy, I would like to express my appreciation for the opportunity to present testimony on the issue of the L-Reactor at Savannah River Plant near Aiken, South Carolina.

Coastal Citizens for Clean Energy is comprised of approximately 30 active members. Founded in 1977, our organization is dedicated to the elimination of the hazards posed by nuclear technology to public health and the environment, and to the promotion, development and wider use of alternative energy sources.

As citizens who live and work less than 90 miles downstream and downwind from the Department of Energy's (DOE) Savannah River Plant (SRP) we are alarmed at the "no significant impact" assessment from the overhaul and planned operation of the L-Reactor. We believe this determination expresses a neglect of essential safety precautions and apparent disregard for the public health by that agency.

The gross understatements outlined in DOE's Environmental Assessment rapidly brought to the surface a number of significant concerns which include, but are not limited to the following:

1) the lack of a protective containment dome which is required by all commercial nuclear power plants in this country.
2) the absence of cooling towers (also required for all commercial nuclear power plants) or other devices to reduce the high degree

of thermal discharge.

3) the subsequent destruction of 1,000 acres of wetlands and wildlife habitats (by DOE's own admission) as the result of this thermal discharge.

4) the flushing of approximately 46 curies of cesium-137 and other radioactive materials by this mass of heated water into the Savannah River which is now the source of drinking water for some 70,000 citizens downstream.

In addition, we wish to bring to your attention the ominous threat to the well-being of our region both ecologically and economically through the potential contamination of our water resources. Not only is there mounting evidence of contamination of the aquifer situated below SRP from radioactive and toxic substances, but it has become increasingly clear that with our ground water supply dwindling, the Savannah River must be retained as a potable water supply for the future. As citizens of a coastal region we are also acutely aware of the possible impacts this contamination may have on our fishing, recreational and tourist industries.

There is far too little demonstrated evidence that the L-Reactor's operation would result in less than significant impacts. And, much is yet to be learned about the health effects of radioactive exposure, even in small doses.

The "once through cooling" system (which is nothing more than the dumping of thermal effluent into a waterway) is a concept nearly as old as nuclear fission itself. We believe this country's technology has not come so far only to be shunned as an "unacceptable delay" in the DOE's timetable. Further, we question whether "cost" (only a minute fraction in the overall framework) should be the determining factor which compromises our health or the integrity of the environment, about which Senator Strom Thurmond has expressed concern.

Further, the L-Reactor cannot rationally be viewed as a singular entity, but must be assessed with the cumulative effects of the numerous existing and planned operations in and surrounding SRP.

Our questions and fears only mount; they will not be abated by simplistic reassurances and assessments. We strongly agree with Senator Mack Mattingly's statement in his November 16, 1982 letter to Donald P. Hodel that "The present 'study' is inadequate...". And we echo the fears he expressed of "...the contamination of our water supply and a general deterioration of the environment as a result of the reopening of the L-Reactor..."

In conclusion, we find no evidence to support DOE's exemption of itself from the law or its refusal to utilize vital technological precautions.

We believe that a thorough Environmental Impact Statement would serve as the necessary mechanism to identify the wide scope of concerns and lend itself to the resolution of conflicts between the public and the Department of Energy.

Therefore, we ask that the Senate Armed Services Committee respond to these concerns by demanding that a comprehensive Environmental Impact Statement, as required by the National Environmental Policy Act, be initiated immediately.

Thank you.

Enclosure No. 49

Honorable Senator: Thurmond, other Distinguished Persons, Ladies and Gentlemen

I am Harry Peacock of Blackville, South Carolina. Born in Barnwell County my heritage lies in this area of the State. I have a vested interest in this community. The people I know best & love most are the people who live in the Savannah River Plant Area. I live less than twenty-five miles from the plant site and I am a firm believer in self-preservation as the first law of nature.

I confess that I am no expert when it comes to nuclear energy, radiation and the like; therefore, I rely on the statistics and the research results of the experts when it comes to these matters. I hope the recent publicity about the Savannah River Plant did not make industrial managers nervous about future investment in our State.

Regardless of one's views on nuclear matters, the recent statement by Mr. Richard Heckert, Vice Chairman of the DuPont Company, extensive scientific analyses of health records of employees at the Savannah River Plant show that employees face no heightened medical risk from any of the plant's operations. Mr. Heckert also reported that federal experts and outside consultants have conducted research and found nothing in their results to indicate cause for legitimate environmental concern as it relates to the operations of the Savannah River Plant.

Since most of us rely on the scientists to tell us what we cannot know unless we are able to do the research, I am relying on the facts and conclusions of the experts. I wholeheartedly endorse the Project at the Savannah River Plant. Although this facility is good for the economy of our community, I would not endorse it's operation if I had any reason to believe that it is dangerous to the environment or health of the people of our community and State.

Sincerely

Harry Peacock

Harry Peacock
P. O. Box 278
Blackville, S.C. 29817

Enclosure No. 50

STATEMENT OF W. MULLINS McLEOD

BEFORE THE U.S. SENATE COMMITTEE
ON ARMED SERVICES

AT NORTH AUGUSTA, SOUTH CAROLINA

ON FEBRUARY 9, 1983

WITH REFERENCE TO THE PROPOSED
RESTARTING OF THE L-REACTOR

Mr. Chairman:

I very much appreciate having this opportunity to testify today regarding the proposed restarting of the L-Reactor at the Savannah River Plant. It is my purpose to urge this committee to demand that the Department of Energy produce a full Environmental Impact Statement prior to taking any further steps toward the restarting of the L-Reactor.

In the first place, I believe that the National Environmental Policy Act requires an Environmental Impact Statement under these circumstances. I realize that the Department of Energy argues otherwise, but I believe their argument fails not only on the merits but on the basis that it is poor public policy for the government to exempt itself from a requirement that it would most certainly impose on any private business or state agency proposing an operation having even remotely similar risks and uncertainties. A proposed paper mill requires an EIS; so does a poultry processing plant. Why on earth should a nuclear reactor be exempt? Surely the potential risk is at least equivalent.

It is known, by the government's own admission, that vast quantities of scalding water will be discharged into nearby marshland and thence into the Savannah River. It is further admitted by the government that the probable effect of this will be to flush some 46 curies of radioactive cesium that has accumulated in the marsh into the Savannah River.

This raises several questions that should be addressed by an Environmental Impact Statement:

1. What effect will this considerable volume of scalding water have on animal and plant life in the marsh and the river? The Department of Energy says that only a thousand acres of marsh will be destroyed. A full EIS would provide some assurance, if this is actually the case. We are all aware of the great importance of our marshes in the life cycles of many species, some of which are endangered and others that are commercially important. This needs to be thoroughly studied using the best of modern knowledge.

2. There is considerable concern about the radioactive cesium which the government admits will be flushed into the Savannah River. Since the Savannah River provides drinking water for numerous communities whose water intakes are located below the discharge site, it seems obvious that a thorough study is needed to answer questions about any possible short-term and long-term effects on those who must use this water. Also, consideration must be given to the shrimping and crabbing industries on the Savannah estuary. Will radioactive waste tend to accumulate in shrimp or crabs, or in other animals higher on the food chain? Will this discharge of radioactive cesium diminish public confidence and thus marketability in seafood from this area?

These questions alone should be sufficient to require an EIS.

3. We also have the matter of property values in a region where resorts are a major industry. If there is a public perception of possible danger, then there is the possibility of drastic effects on the value and marketability of property in areas such as Hilton Head Island and other nearby sea islands. An Environmental Impact Statement would eliminate this possibility if the public concern is groundless, and it would provide the means for eliminating the danger if these concerns are not groundless. On this subject, I think we should consider the case of Three Mile Island. The court in that case has concluded that public fears and perceptions are a valid subject that must be addressed by an Environmental Impact Statement. A similar situation exists here; the public fear is most reasonable; whether or not that fear is well-grounded can only be answered by an Environmental Impact Statement.

A final consideration must be whether this restarting of the L-Reactor is essential to national defense. On that subject, the Senate Committee is privy to information that I am not, so I cannot offer an opinion on this; but I do urge the Committee to give this matter the closest possible study. I also urge the Committee to consider the possibility of eliminating some potential dangers, perhaps by requiring the construction of cooling towers or other steps before allowing any further steps toward restarting this reactor. But most importantly, I urge this Committee to demand an EIS of the Department of Energy for the sake of public safety and peace of mind.

I am submitting with this statement some articles and editorials from the Charleston, South Carolina, News and Courier and the Columbia, South Carolina, State. I believe these articles provide support for my views and are indicative of community concern.

I thank the Committee for having given me this opportunity to testify today.

The News and Courier

Founded Jan. 10, 1803

ARTHUR M. WILCOX, Editor
ROBERT J. COX, Assistant Editor
RUSSELL F. HARNEY, Associate Editor

CHARLESTON, S.C., WEDNESDAY, JAN. 26, 1983 PAGE 12-A

Public Confidence And DOE

The accident at the Three Mile Island plant has been described by some scientists as the best possible nuclear prophylatic that could have been devised. As far as is known, there was no loss of life, although allegations have been made — and are being tested in a court case — that exposure to increased radioactivity may have caused one death. But Three Mile Island made everyone aware of what "might have been."

It brought construction of nuclear power plants to a crash stop. It awakened public opinion to the danger that is inherent when nuclear power is harnessed to generate electricity. More than anything else, and far more damaging in the long run, it destroyed public confidence in the safety of nuclear power plants. The accident, coming in the wake of a film in the catastrophic genre which was popular at the time and starring Jane Fonda, left America with a recurring nightmare.

Although fears have receded since March 1979, Americans have been left with exaggerated anxieties about nuclear energy. Arguments pointing out that many more people are killed in mine disasters and that generating electricity from nuclear energy is no more dangerous a process than its production by other means, have been unconvincing. That is understandable. People know that the safety record of nuclear power plants need only be broken once to kill more people in an hour than have perished in the coal mines of America throughout history. But people can live with that knowledge in the same way that people live in an earthquake-prone area or below a dam. They have enough confidence in the odds against disaster striking them and they know that whatever can be done to make them safe is being done.

The haunting fears associated with nuclear power stem from lack of confidence in the government agencies responsible for regulating plants. The public must be reassured, time and time again, that nuclear power is safe by demonstrating that the danger is minimal. Although nuclear power is temporarily uneconomic because of the drop in oil prices, there is still a consensus among experts that it will be needed to bridge the gap between fossil fuels and the development of the technology needed to harness other sources of energy. In any case, the world being what it is, the devlopment and manufacture of nuclear weapons is going to continue.

People — especially frightened people — can put a lot of obstacles in the way of rational development of nuclear power. It is important, therefore, that government agencies should be seen to be taking exhaustive measures to protect the public from nuclear hazards. Yet the attitude of government bureaucrats is invariably high-handed.

A case in point is the manner in which the Department of Energy is riding roughshod over local opinion in its decision to restart a 29-year-old reactor at the Savannah River plant. Although the reactor will be producing plutonium for weapons, public concern is broadly focused on safety factors and not its use. It will be viewed in the light of the accident at Three Mile Island as a potentially dangerous nuclear facility. That is because when the reactor begins operating it will spew forth scalding water which will swirl through radioactive sludge, deposited in Steel Creek following a leakage of radioactive water from a cooling tower over 20 years ago. Some of it will seep into the Savannah River. Over 50,000 people, in Georgia as well as South Carolina, draw their drinking water from the river. Of course, DOE and plant officials claim that the amount of radioactive material which will enter the river will be so small that it will cause no contamination of the water. Yet DOE is reluctant to allow an independent, full-scale environmental impact statement to be prepared.

DOE, and, particularly, plant officials, who rely on the goodwill of their neighbors, are being woefully shortsighted in denying South Carolinians the right to know, without a shadow of doubt, that the re-starting of the old L reactor, joining three other operating reactors at the plant, will not endanger health or pollute the environment. The state of South Carolina is perfectly right and totally justified in bringing suit against the federal government to secure an environmental impact statement. The state has had no accident of the magnitude of Three Mile Island but it has had its confidence shaken and its goodwill abused by the federal government's policies. The federal government should agree to an independent inquiry into the effects on the environment of increased activity at the Savannah River plant and it should restudy the economics of constructing a cooling tower at the plant, which would eliminate much of the hazard represented by the radioactive sludge. By seeking a variance for the water discharged from the L reactor, DOE has virtually admitted that it will not be able to comply with the state's Clean Water Act. The case for a full and exhaustive environmental impact statement could hardly be stronger. DOE will ignore it at its peril. Bureaucratic arrogance, however, is a minor issue compared with the damage that DOE could cause to the rational and safe development of nuclear energy in the state by undermining the confidence of the people and adding to their fears.

The State

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10-A Columbia, South Carolina, Saturday, January 29, 1983

Public Must Be Heard On L-Reactor Fears

IT WOULD be better for all concerned if the U.S. Department of Energy would change its stance and agree to provide an environmental impact statement (EIS) on restarting the controversial L-reactor at its Savannah River Plant.

The decision to renovate the reactor, which has been out of commission since 1968, was made to increase production of plutonium and tritium for the nation's nuclear weapons program. Three other reactors are already in use at the plant, and the energy department wants this one on line in October.

Under the National Environmental Policy Act (NEPA), construction or operation of any facility which may have a significant impact on the environment or public health must be preceded by an environmental impact statement. Development of an EIS includes public participation, a chance for interested persons to state their concerns and challenge claims and data.

The Department of Energy, however, has avoided the EIS requirement by claiming startup of the L-reactor would not be environmentally significant. But the department has provided its own environmental assessment, supported by additional studies by a consulting firm, which says the L-reactor presents no health or environmental hazards.

National and S.C. environmental organizations have alleged a number of hazards will be created. For example, a thousand acres of wetlands in the Savannah River Plant's perimeter would be flooded with scalding water and destroyed. The Department of Energy denies the charges.

But state officials were alerted by the controversy, as Staff Writer Howard Schneider so well detailed in an article last Sunday, and have committed the State of South Carolina to go to court with the environmental groups to force the Department of Energy to provide the EIS. The case will be heard in the U.S. District Court in Washington, D.C. No date has been set.

There may be a preview of the arguments, however, on Feb. 9, at North Augusta High School, where U.S. Sen. Strom Thurmond has set a hearing by the Senate's Armed Forces Committee on the L-reactor controversy. Senator Thurmond said he expects the hearing to be a "constructive forum."

"The reactor is of critical importance to our goal of increased production of additional defense weapons materials. However, we must never take chances with the public's safety and our health, and integrity of our environment and drinking water," he said.

How these two concerns will balance off remains to be seen. The public surely is entitled to its concerns for health and safety, and the Department of Energy does have a serious responsibility to provide nuclear weapons materials. Those concerns should not be mutually exclusive.

Barring the disclosure of defense secrets, the Department of Energy could do much to gain public confidence in the L-reactor, the deparment and the federal government if it were to agree now to go the EIS route. This is not the last controversy the agency will have with the State of South Carolina, and how this one is handled could very well set attitudes and approaches in the future.

8-D—The News & Courier, Charleston, S.C., Wednesday, Jan. 26, 1983

L-Reactor Hearing May Be Short

Staff And Wire Reports

WASHINGTON — An upcoming Senate Armed Services Committee hearing on re-starting a dormant nuclear reactor at the Savannah River nuclear weapons plant may be much shorter than expected.

A spokesman for Sen. Strom Thurmond, R-S.C., said only one person has requested to testify at the Feb. 9 hearing in North Augusta — former 1st District congressional candidate W. Mullins McLeod. Requests to testify, including a written summary of expected testimony, must to be sent Thurmond's office postmarked no later than Friday.

W. Mullins McLeod

McLeod made a campaign issue out of the Department of Energy's plans to reactivate the Savannah River Plant's L-Reactor without preparing an environmental impact statement.

The S.C. House of Representatives Tuesday approved the state's decision to join a federal lawsuit seeking a detailed study on the impacts of restarting the reactor.

South Carolina two weeks ago announced it would join a suit filed in Washington by several environmental groups over plans to reactivate the reactor.

While Thurmond has not taken a position on restarting the reactor, he has said he won't go along with the plan unless the Department of Energy proves there will be no health or environmental-damage.

The restart is part of a national effort to build up the U.S. nuclear arsenal. Federal officials say the reactor reactivation will result in the flushing of mildly radioactive cesium into the Savannah River. That prospect which has sparked opposition in downstream cities, including Savannah, Ga., and Beaufort, that get their drinking water from the river.

Environmental groups claim that current plans for cooling the L-Reactor and dumping hot wastewater will destroy hundreds of acres of marshland.

Government witnesses at the Feb. 9 hearing will include representatives of the Energy Department and the Environmental Protection Agency.

Thurmond is urging all interested persons or groups to appear at the noon hearing at North Augusta High School. The session will be conducted under Senate Armed Services Committee rules, which require submitting a request to testify along with a brief summary or outline of expected testimony.

Only testimony directly related to the environmental consequences of re-starting the L-Reactor will be al-

Requests to testify should be mailed to the attention of Jim Smith of the Senate Armed Services Committee staff, Russell Senate Office Building, Washington, D.C. 20510.

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It is with considerable concern that I have been following news about the renovation of the old L-reactor at the Savannah River Plant. It is necessary that a complete awareness of all the facts must be brought forward, particularly those concerning the impacts of the past thirty years of operations at the S.R.P. Such information is essential before intelligent, responsible decisions about the detrimental health and environmental effects of the 4th reactor can be assessed. No technology assessment is conducted in isolation. For these reasons a full, comprehensive Environmental Impact Statement is needed.

South Carolinians and Georgians should not be expected to take on faith any persuasion by the D.O.E. that there are no dangers to the public at the Savannah River Plant.

In statements to the press, on television, and during presentations at meetings, S.R.P. people have downplayed the detrimental effects which would result from the start-up of the L-reactor. I believe it is safe to say that there will be an increase in incidents, accidents and problems at S.R.P. with the additional reactor's restart.

There have already been numerous accidents at the plant during which radioactivity was released into the environment. In 1977, 479,000 curies of tritium were released in a single day. In contrast, The American Atomic Tritium facility in Tucson, Arizona released approximately 250,000 curies of tritium in 1979, causing the state to revoke its license.

Between May 30th and June 3rd 1961 the Savannah River Plant released the single largest amount of radioactivity ever reported in scientific literature for a United States facility: 153 curies of radioiodine. Plutonium has been released in exhaust plumes. No reactor incidents or accidents are reported to the public, and the plant's safety reports are not sent to any federal or state regulatory agencies.

There have been technical problems at the Savannah River Plant. Internal safety reports revealed in 1980 to the only reporter ever allowed access to the plant's nuclear safety documents, indicated that incidents happened about twice a week that year. Each, and I quote, "....stripped away at least one layer of a reactor's envelope of safeguards, exposing workers or the public to some extra measure of radiation risk. Each had nuclear hazard potential."

Emergency diesel power has been unreliable at the plant. It failed during tests in 1978 and 1979. It failed during times it was needed. There have also been losses of off-site electricity—three in 27 years—that have caused near-misses. In addition, as much as 300,000 curies of tritium are routinely released into the atmosphere each year.

I am sure that government recognizes that natural and medical radiation produce cancer and genetic harm in direct proportion to the dose received. Government should also recognize that it has a moral responsibility not to deceive the public into thinking that any amount of ionizing radiation is safe. Even DuPont concurs with major health agencies that any radiation dose above that found in nature is deemed potentially harmful.

A retired former member of the Savannah River reactor design team has explained that "....the choice of cooling towers, or a 'once through' cooling system was purely a matter of economics in the 1950's." It is evident that government made the decision to pollute, rather than to control pollution at its source. Government agencies are often the biggest promoters of pollution activity, with little regard for the public interest.

Now, years later, we know about the D.O.E.'s plans to dump large volumes of radioactive cesium-contaminated hot water into the Savannah River. Without the benefit of cooling towers, all wildlife in the wetlands will be destroyed, fish in the river will be killed, and the cesium in the water will pose a threat to the health of people who drink Savannah River water.

I don't claim to be a nuclear expert. Through reading, however, I recognize that there is a conflict between rosy pictures that S.R.P. people paint concerning the flora and fauna in the swamps of the Savannah River Plant, and the findings of scientists with the Savannah River Ecology Laboratory of the University of Georgia. The authors of the article, "Thermal Alteration of Aquatic Ecosystems" in the magazine The American Scientist, were coeditors of Thermal Ecology in the A.E.C. Symposium Series, and were organizers and program chairmen of the Thermal Ecology Symposium held in Augusta, Georgia in May 1973.

The following are a few small examples of what the scientists discovered, and I quote: "All trees and other components of the forest community have been eliminated from approximately 560 acres of the swamp receiving the heated water from the S.R.P. reactors. The dead trunks of the cypress trees are the only remnants of the original flora of these acres."

Species of plant and animal life were eliminated, and only 8 plant species still exist in the area receiving heated water, while 5 fish species and 2 species of reptiles have survived. In the unheated portions of the S.R.P. area, 34 plant species, 23 fish species, and 9 species of reptiles live. I can only wonder how many (if any) government officials and others have been shown this aspect of the problem while touring the Savannah River Plant.

When S.R.P. people argue against an E.I.S. they are arguing against facts, and arguing against the summary of 5 years of scientific research by numerous investigators at the University of Georgia's Savannah River Ecology Laboratory. If any committee members would like to see it, I have with me a copy of the November 1974 edition of The American Scientist that contains photographic evidence of what happens when heated water from a nuclear reactor is released without the use of cooling towers. It is immoral for government to put a low dollar value on human and other life forms in South Carolina, or anywhere else, while pushing additional hazardous technology where there is already too much.

If we have a rational society where the health and welfare of citizens is paramount, constructive action is possible to protect lives, health and the environment. There should also be recognition by the D.O.E. that burden of proof is upon technology to prove safety, rather than the public to prove hazard.

The National Environmental Policy Act became law in 1970. The D.O.E. is circumventing the spirit of the law in evading the issue of doing an E.I.S. at the Savannah River Plant. An E.I.S. is necessary to assess existing and potential problems at S.R.P. A containment dome is needed to prevent radioactivity from escaping from a reactor in case of an accident, and cooling towers for the avoidance of hot thermal discharges into the Savannah River.

Nepa set the process up, and now government should play by its own rules.

Beatrice D. Jones
The Heritage
1829 Senate Street
Columbia, SC 29201

Enclosure No. 52

TESTIMONY
ON THE SAVANNAH RIVER PLANT L-REACTOR

by Dennis J. Hoffarth, P.E.

SENATE ARMED SERVICES COMMITTEE HEARINGS
NORTH AUGUSTA, S.C.
FEBRUARY 9, 1983

TESTIMONY OF DENNIS J. HOFFARTH, P.E.
L-REACTOR HEARINGS FEBRUARY 9, 1983

MR. CHAIRMAN, I HAVE DEALT WITH COUNTLESS CONSTRUCTION PROJECTS AS A REGULATORY ENGINEER. AS SUCH, I BELIEVE I HAVE DEVELOPED CERTAIN VALUABLE INSIGHTS THAT BEAR UPON THE PROPOSED L-REACTOR OPERATION.

FIRST OF ALL, IN READING THE ENVIRONMENTAL ASSESSMENT, I COULDN'T HELP BUT WONDER WHY THIS DOCUMENT WAS BEING WRITTEN BY THE DEPARTMENT OF ENERGY. IT APPEARS TO BE A CLEAR CONFLICT OF INTEREST -- LIKE GIVING A CHEMICAL COMPANY THE POWER TO DECIDE IF ITS TOXIC WASTES ARE DANGEROUS. I KNOW FROM EXPERIENCE HOW SUSCEPTABLE SCIENTIFIC DATA IS TO MANIPULATION AND FUDGING BY ENGINEERS AND SCIENTISTS. FOR THIS REASON ALONE, I BELIEVE THE ENVIRONMENTAL ASSESSMENT (EA) IS INSUFFICIENT AS A FINAL DETERMINATION OF THE ENVIRONMENTAL EFFECTS OF THE L-REACTOR. A FULL ENVIRONMENTAL IMPACT STATEMENT (EIS) BY AN INDEPENDENT PARTY IS NEEDED TO MORE OBJECTIVELY EVALUATE THE DOE'S CONTENTIONS, AND TO EXAMINE THE IMPACTS IN MORE DETAIL.

FURTHERMORE, THE EIS SHOULD EVALUATE THE APPROPRIATENESS OF THE DOE REGULATING ITSELF IN THE OPERATION OF THE L-REACTOR, AND FOR THAT MATTER, THE ENTIRE SAVANNAH RIVER PLANT (SRP). IT IS HIGH TIME THAT WE GET AWAY FROM THE NOTION THAT AN AGENCY OR INDUSTRY WILL REGULATE ITSELF. THE DOE HAS THE PRIMARY GOAL OF PRODUCTION, NOT PROTECTION, AND WHEN THESE TWO CONFLICT, WE KNOW PRODUCTION WILL TAKE PRECEDENCE EVERY TIME. WE LEARNED OUR LESSON IN THE REGULATION OF COMMERCIAL NUCLEAR POWER, AND APPROPRIATELY SPLIT THE ATOMIC ENERGY COMMISSION INTO THE DEPT OF ENERGY AND THE NUCLEAR REGULATORY COMMISSION(NRC). FOR SOME REASON, MILITARY

NUCLEAR OPERATIONS WERE EXEMPTED WHEN THIS CHANGE WAS MADE. THE EIS SHOULD THEREFOR CONSIDER REDUCING ENVIRONMENTAL IMPACTS THROUGH INDEPENDENT REGULATION BY THE NRC OR SOME OTHER AGENCY.

IN SECTION 4.1.2.3 OF THE EA, THE DOE SETS OUT THEIR CALCULATED ACCIDENT RISKS AND CONSEQUENCES. IT IS IMPORTANT TO KEEP IN MIND THE LIMITATIONS OF SUCH PREDICTIONS, AND NOT TO BE FOOLED BY THEIR PRECISE APPEARANCE. AN UNPREDICTABLE COMBINATION OF HUMAN ERRORS OR "ACTS OF GOD" WILL QUICKLY INVALIDATE ALL THESE CAREFUL NUMBERS, AND CAN RESULT IN MAJOR RISKS TO THE PUBLIC. THIS IS COMPOUNDED BY THE UNPREDICTABLE EFFECTS OF WEAR AND AGE ON THIS PARTICULAR REACTOR, HAVING BEEN UNATTENDED FOR YEARS. BUT, OF COURSE, WE MUST ATTEMPT TO ESTIMATE THESE ACCIDENTS AND PROTECT AGAINST THEM, SO AS WE DO, LET US HAVE THE WISDOM TO ERR ON THE SIDE OF SAFETY. AND LET US DO SO WITH MORE COMPLETE INFORMATION THAN THE CURSORY EXAMINATION PRESENTED IN THE EA.

IF WE ARE TO ERR ON THE SIDE OF SAFETY, IT APPEARS THAT THE DOE IS USING A FALSE SENSE OF ECONOMY IN FAILING TO ADD A SECONDARY CONTAINMENT DOME AND COOLING TOWERS TO THE L-REACTOR. IT IS CLEAR THAT THE COST INVOLVED WOULD BE NEGLIGIBLE COMPARED TO OVERALL NUCLEAR WEAPONS EXPENDITURES. THIS EXCLUSION SHOULD BE CORRECTED IN THE EIS , FOLLOWING A MORE OBJECTIVE EVALUATION.

MY CONCERN ABOUT THE INCREASED SPREAD OF RADIATION STEMMING FROM THE L-REACTOR IS HEIGHTENED BY THE POOR RECORD OF OPERATIONS AT EXISTING SRP FACILITIES. I'M TALKING ABOUT THE CONTINUED LEAKAGE OF RADIOACTIVE WASTE BURIED AT THE SRP; THE HUNDREDS OF THOUSANDS OF CURIES RELEASED EVERY YEAR INTO THE AIR FROM SRP OPERATIONS AND ACCIDENTS. I'M TALKING ABOUT THE ACRES UPON ACRES OF WETLAND

THAT ARE ALREADY CONTAMINATED WITH CESIUM AND TRITIUM FROM SRP WASTEWATER RELEASES. THE EIS IS NEEDED TO EVALUATE AND REQUIRE WHOLESALE IMPROVEMENTS IN THE WAY THIS ENTIRE PLANT IS OPERATED, INCLUDING THE L-REACTOR.

AS A RESIDENT OF A MAJOR POPULATION CENTER ON THE SHIPPING ROUTE TO AND FROM THE SRP, I WOULD ALSO LIKE TO EXPRESS MY CONCERNS ABOUT THESE SHIPMENTS. CLEARLY, THE CONTINUED EXPANSION OFTHE SRP WITH PROJECTS LIKE THE L-REACTOR WILL CONTINUALLY INCREASE THE TRANSPORT OF RADIOACTIVE MATERIALS TO AND FROM THE PLANT, WITH THE ACCOMPANYING INCREASE IN RISK TO THE POPULATIONS ALONG THE WAY. THESE RISKS ALONE SHOULD BE ADEQUATE REASON TO QUESTION THE DOE'S FINDING OF "NO SIGNIFICANT IMPACT", AND SHOULD JUSTIFY PERFORMING A FULL EIS.

I AM NOT CONVINCED THAT THE L-REACTOR WILL BE THE LAST PROPOSED EXPANSION OF THE SRP. WITH OUR CONTINUED TREND TOWARD MORE AND MORE NUCLEAR WEAPONS PRODUCTION,IT WILL BE JUST A MATTER OF TIME BEFORE ANOTHER REACTOR IS PROPOSED, THEN ANOTHER. RADIOACTIVE CONTAMINATION ON AND OFF THE SRP RESERVATION WILL CONTINUE TO INCREASE, DESPITE OUR KNOWLEDGE THAT THERE IS NO SAFE DOSE OF RADIATION.

IN THIS LIGHT, LET ME CONCLUDE. IF WE CANNOT SOMEHOW REDUCE OUR NEED FOR NUCLEAR WEAPONS BY SOLVING OUR DIFFERENCES LIKE THE CIVILIZED BEINGS WE CLAIM TO BE; IF WE ARE TO CONTINUE UNENDING PRODUCTION OF NUCLEAR WEAPONS AT THE SRP, LET US AT LEAST RESOLVE TO DO SO AS SAFELY AND IMMACULATELY AS WE POSSIBLY CAN. A FULL EIS SHOULD BE PERFORMED WITH THIS GOAL IN MIND.

AFTER ALL, WE CANNOT PROVIDE NATIONAL SECURITY BY ENDANGERING OUR OWN POPULATIONS. IT MAKES LITTLE SENSE FOR THE AMERICAN GOVERNMENT TO SUBMIT THE AMERICAN PEOPLE TO AMERICAN RADIATION SO AS TO PROTECT THEM FROM RUSSIAN RADIATION.

Enclosure No. 53

SENATE ARMED SERVICES COMMITTEE HEARING
North Augusta, S. C.
February 9, 1983

LOU GRANT, Speaker - Does not favor EIS

Senator Thurmond, Members of the Committee, and fellow believers:

We have gathered here today to hear the pros and cons of an EIS. We are now to the point of asking ourselves "WHO DO WE BELIEVE?

Resolutions from the Aiken, North Augusta, and New Ellenton City Councils have urged the reactivation of the L Reactor. These Resolutions reflect the opinion and desires of those who work and live in this area. duPont and DOE have lived among us for 30 years. They are not men from Timbukto who would tolerate or support anything hazardous to our health. They go to church with us, pay taxes, participate in our local government and civic affairs. We know they are concerned with the environmental protection of everyone in our community, South Carolina and Georgia. They conduct thousands of tests each year to assure our safety. An independent, outside engineering firm recently completed a 5 million dollar study and found no cause for alarm. Can we justify the expense and delay of another study? Are we taxpayers so flushed that we need to spend another 5 million?

The satellite phogographs which show the Plant site as a green area is no accident. Tens of hundreds of thousands of trees have been planted. There are birds, deer, alligators, bobcats, and wild turky in the area. This place is designated officially a national environmental park. There is an ecology lab where scientists from all over the country do special studies. The record of duPont and DOE on safety and environment is indeed outstanding. The L Reactor has operated safely for 14 years before the demand for defense material declined. Which duPonter, which member of DOE, which town official or business person here would advocate reactivating this reactor solely for economic reasons? Do you really believe anyone here would do that? Of course you don't! This is their home, our home - our families live here. We are not anti-nuclear activists from Washington, D. C. or some other state. Where to these people come from anyway? Are they scientists, engineers or politicians? What is their real interest in our area? Who are they funded by? Our US Dept. of Defense says the L Reactor is vital to the defense of our country - Who is fighting this? Do they care if another 5 million of our tax money is spent for another study? Do they care about the 400 jobs precluded by another study?

Our area has been most fortunate to have had duPont and the DOE for the past 30 yrs. Since they came many other fine industries have chosen our area. Don't you believe they checked us from A to Z, including the environment, before making a decision. Their coming here has demonstrated their faith in every facet of this area, and has thus given us an economic edge we had never enjoyed before. duPont and the DOE has actually served as a drawing card for other industry. Senator Thurmond, Members of the Committee, Ladies and Gentlemen, (over)

Enclosure No. 54

Testimony of S. David Stoney, Jr., Ph.D., at the Public Hearing Concerning Restart of the L-Reactor at the Savannah River Plant, Sponsored by the Senate Armed Services Committee, North Augusta, S.C., February 9, 1983

Ladies and gentlemen, members and represenatatives of the Armed Services Committee, thank you for this opportunity to voice some concerns regarding restart of the L-reactor at the Savannah River Plant. My name is David Stoney, Jr. I am a resident of Augusta, Georgia, and hold a Ph.D. degree in the field of Physiology in which I do teaching and research as a profession. I am a plaintiff on the L-reactor suit. I appear at this hearing today as a private citzen, concerned about real and potential health effects stemming from routine and accidental releases of radioactivity from a restarted L-reactor.

I am convinced that restart of the L-reactor constitutes a "major Federal action" and that an Environmental Impact Study (EIS) is clearly required by law. The Environmental Assessment (EA) prepared to justify restart of the L-reactor is vague in many areas, omits important concerns and is difficult for a lay person to interpret. The 350-400,000 citizens that live in the counties surrounding the L-reactor (and the other three operating reactors at SRP for which there have never been EISs) deserve an opportunity to assess the risks associated with its use. It is, after all, their tax dollars that are being used to restart the L-reactor. Failure to require an EIS will put the Department of Energy (DOE) in the unenviable position of, in effect, claiming that routine atmospheric releases of over 500,000 Curies/yr of radionuclides to the air of the CSRA poses no potential threat to "the quality of the human environment." Bear in mind that each Curie represents $3.7X10^{10}$ disintegrations, i.e. radioactive emmissions, per second. After the first year of operation we're talking about a mounting cumulative total of upwards of $18.5X10^{15}$ radioactive emissions per second being added to the environment by the L-reactor and the other SRP reactors. Also bear in mind that the above considerations do not take into account routine L-reactor releases to streams and rivers of approximately 13,000 Curies/yr or L-reactor waste production of approximately 180,000 Curies/yr. I submit that a conclusion of "no risk or impact" is compatible neither with the facts nor with common sense.

My main areas of concern are the health effects of routine releases of radioactivit the possibility of catastrophic releases, and the absence of emergency response preparedness in the areas surrounding the L-reactor.

With regard to routine releases of radionuclides, it is recognized by the Environmental Protection Agency that "no threshold can be assumed for health effects due to radiation exposure..." and that "...all doses which accrue to exposed populations result in some increment of risk" (EPA 520/4-73-002, 1974). It seems to me that in finding "no significant impact" for restarting the L-reactor the DOE is in fact proposing that the citizens of the CSRA particpate in an uncontrolled medical experiment. How are we to give our "informed consent" for this radiation treatment except via the public testimony and questioning which is required by an Environmental Impact Statement?

With regard to the possibility of catastrophic releases of radioactivity, I am not convinced that the estimates of consequences and risks associated with a loss of coolant accident (LOCA) in EA, or, for that matter, in the Environmental Document, L-Reactor Reactivation, give us much chance to assess just what the bottom line is in producing plutonium for nuclear weapons. The scenarios involving a LOCA leading to a partial core meltdown are based on assumptions which minimize radionuclide release. It is not pointed that a minor malfunction or human error during a LOCA which delays, just for a few seconds, the activation of the Automatic Backup Shutdown-Safety Computer and Supplemental Safety System could lead to a steam explosion. Such an explosion could breach the reactor building and/or foul or damage the Activity Confinement System, leading to a much larger release of radioactivity than considered in the EA. That possiblity, however remote, is why all new reactors are required to have heavily-reinforced containment domes. As far as I known there are only two places in the world where reactors such as the L-reactor do not have containment domes: the SRP and Russia.

Accidents, even those considered to be "impossible", do sometimes happen, as witnessed by the near core meltdown accidents at the Three Mile Island and Brown's Ferry nuclear plants. Accidents also happen at the SRP as witnessed by the unplanned releases of hundreds of thousands of Curies of Tritium gas in 1974 and 1975. Furthermore, there have ben unwanted incidents at SRP reactors involving single control rod withdrawal, partial gang control rod withdrawal, partial control rod insertion, loss of off-site AC electrical power, loss of AC power to coolant pumps, rotovalve closures at full power, flow reduction in a single fuel assembly, loss of control rod cooling, loss of blanket gas pressure, melting of fuel rods during discharge, and fouling of emergency cooling systems by organic matter.

Last with respect to catastrophic releases of radioactivity, the EA errs, in my opinion, in not considering the radiological consequences and potential health effects of an act of sabotage or terrorism aimed at the high-level waste storage area for L-reactor wastes. It also errs in not considering the possibility of a transportation mishap involving fuel for or plutonium produced by the L-reactor.

In regard to emergency response preparedness, the EA seems particularly deficient. A fairly elaborate evacuation plan exists for employees at the SRP. Nevertheless, there seems to be little local planning and virtually no coordination between SRP and local communities, in spite of the fact that large-scale releases of radioactivity which could have serious effects on health of individuals in surrounding communities could happen in several different ways. As of January 24, 1983, the Richmond County, Georgia, Office of Emergency Management did not even have a direct radio hookup with SRP, nor was there any evacuation plan to deal specifically with a radiologic emergency. This is ominous indeed considering that Augusta, Georgia, may soon have the dubious honor of having 6-7 large nuclear reactors, 4 without containment domes, operating with 30 miles of the city. Again, I would argue that preparing an EIS for the L-reactor would allow resolution of DOE and local community responsibilities for emergency response preparedness and would allow the development of coordinated plans between SRP and its neighbors. Such plans would be of critical importance in the event of a radiological emergency. Thank you, very much.

Enclosure No. 55
TESTIMONY

S.R.P.'s L-Reactor Reactivation Hearing
North Augusta, SC
February 9. 1983

My name is Elwin Tilson. I presently live in Savannah, GA where I am an Assistant Professor in the radiation sciences. Amoung my teaching duties, I teach courses in radiation physics and radiobiology. Because of my background and location, I have a keen interest in the proceedings of this Committee.

I have lived in the Savannah area for only five months but in that time I have become very alarmed by what I see in the attitudes and knowledge of the general public. Basically, the public does not understand and does not trust the vast majority of information being put out by the Savannah River Plant and the Department of Energy regarding the reactivation of the L-Reactor. I base this observation on the fact that numerous individuals and even groups have approached me to explain to them information being put out by the Savannah River Plant and DOE. The individuals and the groups that have contacted me seem very interested in the issues and have tried to understand the problems and thier associated information. Their major problem in understanding the issues involved seems to stem from the quality of the information being distribuated. This information seem to fall into two categories.

The first category is informationso technical that the lay public does not understand it. I realize all citizens should be informed about such issues; but, as a teacher, I feel the information being put out is far too technical to expect public to understand it. An in-depth technical education is necessary to deal with much of the information given. Also, this technical information sometimes is either totally useless or misleading. An example is the report of radiation releases given in the news media. Releases are often described as being X becquerel or curie. This is uesless information unless the source of the radiation is known also. Without knowing the source, one does not know if the source will be in the environment for only a few hours or for tens of thousands of years and one also does not know if the source is relatively nondamaging to man or if it is highly damaging to man. This kind of information leads to confussion and distrust on the part of the public.

The second type of information being put out by the SRP and DOE is the 'non-technical' type. When attempts are made to explain the issues invclved in 'non-technical' terms, the information is often very misleading or misunderstood. Either way, the public is left with little enlightenment and an increase in mistrust towards the SRP and DOE. An example of this type of information was an analogy taken away by the audience from a public hearing regarding the reactivation of the L-Reactor held in Savannah a few months ago. The amount of release of radioactive materials from the L-Reactor was characterized as being no more than "three B.B.s worth of material". Such a statement is highly misleading as that amount of material could be relative nondangerous if it were something like ^{99}Te. On the other hand, if the material were ^{137}Ce it would be much more dangerous and longlasting.

A third example of questionable information can be found in the Environmental Assessment document for the L-Reactor. In the Assessment, much emphasis is placed on the ^{137}Cs found in the soil and streams. However, the Assessment also states that 32 times more activity from ^{60}Co was found in the seepage basin but the document does not answer the question of what happens to the ^{60}Co discharged. If substantially higher levels of activity were found for ^{60}Co, why wasn't this also investigated?

We are potentially at a major crossroads in deciding the future of the environment for the Savannah River Basin and the surrounding areas. Because this decision has such wide reaching and long lasting implications, the public must have a voice in deciding their own future. The public can not do that presently because of thier lack of reliable and understandable information. To give the public the information they need to make an informed decision, an Environmental Impact Statement should be done. This study should be done by an outside, unbiased agency that is not involved in the L-Reactor or have historical ties to the nuclear reactor industry. In this way the EIS itself can not be called into question.

Thank you very much for the opportunity to bring my concerns to your attention.

Enclosure No. 56

CRITIQUE OF DEPARTMENT OF ENERGY'S ENVIRONMENTAL ASSESSMENT OF L-REACTOR START-UP, 1982.---

By Jan Laan

5950 Ogeechee Rd.
Savannah, GA 31405

My name is Jan Laan, and I presently am employed as Rooms Division Manager at a major downtown Savannah hotel. I am a Savannah resident with training in the ecological sciences who wishes to point out the necessity of an Environmental Impact Statement before the opening of the L-reactor at the Savannah River Plant (SRP).

My education includes full scholarship study at Columbia College (New York City); BA, Botany, Univ. of N.H.; Masters degree work, geography, Univ. of Wisconsin-Milwaukee, with a full grant from the National Science Foundation; near completion of a PhD program at the Univ. of Wisconsin-Madison, Soils, with a full grant from EPA. I also had training as a science writer at the Univ. of Wisconsin-Madison (one of the few such training programs in the country), and was hired as a medical writer by Modern Medicine magazine, a NY Times owned company and 3rd largest circulating medical magazine in the country at the time.

All this training gives me some insight into evaluating the Department of Energy's assessment (DOEA), which is a poor substitute for a comprehensive Environmental Impact Statement (IES). All too often supposedly highly scientific, and supposedly accurate data, are foisted on an unsuspecting public as the Word Handed Down on High, -data the public cannot accurately evaluate. Jargon is misused, and helps hide weak data. Since not enough journalists are trained in the sciences, there are large gaps in our general understanding of what is going on in the sciences.

Another major problem is the general misconception that scientists present hard and fast answers- they do not. We work as scientists, especially in the field of ecology, with such a large set of complex variables, that very little is known at all with any certaintude. The study of soils itself, only a little over 100 years old, is a vast area- since the soil is such a hugely complex mixture of organic and inorganic elements.

And when conclusions are drawn from very incomplete data, poor sampling, and pure conjecture without supporting data- and put forward as conclusive evidence- the public is in trouble. I will now point out some of what I consider errors in the DOEA- knowing full well how easy it is to criticize. I can only say that Uncle

Sam sent me through school, and I would like to help return the favor. If my government sees fit to conduct a real Environmental Impact Statement, I volunteer my services. Mr. Reagan called for volunteers- Here I am.

I now propose to take you through the DOEA and point out the weaknesses I found. There are very many more qualified people who could point out more weaknesses- and I hope to hear them today- and if I don't- I hope to hear them when they assist in the Environmental Impact Statement process.

On page 2-6 of the DOEA there is a discussion of a 1.9 million liter tank which says "If this tank should become full, the additional water spills out into the emergency basin". I can only ask-under what conditions might this tank become "full" and what happens to this water once it spills out into the emergency basin- the DOEA provides no conjectures on this.

On page 3-6 the DOEA states "Most municipal and county wastewater treatment systems have the capacity to treat additional sewage". Then mention is made of those rural municipalities in Allendale, Bamberg and Barnwell Counties, and the City of Augusta which are "experiencing problems in treatment-plant capacity". However we are supposed to be reassured because "Programs to upgrade facilities are under way or planned in most of these areas". The L-reactor is proposed to restart in October, 1983- will the "plans" be reality by then?

With regards to earthquakes in the area (p3-8), lack of knowledge by the DOEA is presented which, I suppose, is meant to be reassuring. "Evidence for the last movement on the Belari Fault (which is about 20 miles from the site) is not conclusive"."The time of the latest movement on the Millet Fault, which is nearly conicident with the southeastern SRP boundary, is not precisely known." "Seismological studies indicate that the Savannah River Plant is in an area that could incur moderate damage from earthquakes." I hope we could explore that a little further in an Environmental Impact Statement, Exactly what is "moderate"?

I am a little confused how it can be stated that the "Savannah River Plant is a major user of river"- it can withdraw about "25% of the 7-day, 10-year low flow" of the River- and then say that an IES is unnecessary? Also, this figure is based on data from 1963-1979- with no explanation as to why these years should be considered the proper years for advancing a model of water flow. They might not be representative of a good model for the future.

Page 3-16 of the DOEA states that "In the L-Reactor area, the water table is generally 3 to 12 meters below the ground surface". When is it closer to the surface? I really would like to know. An IES might be one way to get an answer.

On the same page, it is stated hydraulic conductivity studies were made of the clayey sand unit, but not of the silty sand unit. I might, naively, ask why? Could it be that the figures might be too alarming- since most school children know that water travels faster through sand than through clay. And here we are talking about ground water movement. And the DOEA readily admits that the whole SRP drains to the Savannah River, which is a major drainage network in the southeastern U.S.

I also have a little problem with the use of the word "median" when used with testing of hydraulic condictivity (water flowing characteristics). A median is a middle value- I would like to know what the two ends are. I'm not so interested in your median fish- which I never caught- but the biggest one, which maybe didn't get away.

P 3-19 of the report states that the total pumpage for municipal and industrial users in the vicinity of the Savannah River plant is now about 89,000 cu meters/day. Now, the "Currently identified future ground water uses" add up to 30,000 cu m/day-- a figure 1/3 as large as the total municipal and industrial uses now- but the DOEA goes on to say (p3-21) that there has not been an effect on ground water levels for the past 27 years from the present usage of 24,500 cu m/day. Now they propose to double that usage- and we are to infer that the effect will be nil?

"Occasional tornadoes are to be expected in the SRP area." The DOEA GOES ON TO SAY THAT (p3-25) an average of 10 tornadoes per year strike South Carolina. The statement that "No SRP production facility has ever suffered significant damage from a tornado" would be reassuring- had I not studied statistics: the longer the SRP is not struck, the more probable it is that it will be struck! Strange logic this statistics- but that's the stuff of science. If the DOE wants to use statistics, they had best go all the way. The DOEA readily states that the "annual probability of a tornado striking any large building [on SRP] is about" one in 1000: I don't really like those odds when we are talking about a nuclear reactor.

Page 3-32 of the assessment describes 5 vegetative associations, 2 of which are "impacted zones" and 3 of which are not. It is not nit-picking to say that a basic premise of ecology is that something happening in one area inevitably and ivariably will affect another nearby area. So, to make a clear-cut statement that one area is "affected" and another is not is merely to mask innacurate sampling and observation.

There will be a zone of obvious effects and a zone of less obvious effects- what is needed is to study both zones, so we can predict the effects more accurately, rather than rely on faulty conjecture.

More than 123 species of plants were listed during the 1981 field study (p3-35) and approximately 400 algae species were identified from the Savannah River near the SRP. Now to do this fine identification work, and not mention a word about biological transport mechanisms of radioactive cesium, except for a mere nod to "bioaccumulation factors" for fish is being extremely negligent.

The whole discussion of transport of the radioactive cesium is very sloppy. While acknowledging that the cesium is "strongly associated with the sediments in Steel Creek" (p3-43), the DOEA states that the association is with clay, minerals, and with naturally occurring organic material. The remainder of the discussion is mainly concerned with the inorganics, though.

Soil samples taken from 12 transects could hardly be representative, since soils are too variable. Then soil samples were "graded visually"- I don't understand this, since quite sophisticated soil testing techniques are available. No mention of respective organic matter content of these soils was made- a highly important consideration.

The United Kingdom Atomic Energy Authority has performed a study that showed that cesium 137 was present mostly in the surface mat of decomposed vegetation (PR Hesse, A Textbook of Soil Chemical Analysis, p 390). Yet I see virtually nothing about this association with organic matter in the DOEA. I'm not quite sure why-an IES might tell us why.

Page 3-44 states "Because of itsStrong association with sediment... the cesium 137 in a water sample can be assumed to associate with the suspended solids". What is not provided here is the definition of a "suspended solid". What size are we talking about. And why, again, are we neglecting the active mechanism of biological transport? I hate to be too suspicious but my EPA training is too ingrained.

Page 3-45 reveals for me one of the most curious attempts at scientific Alice in Wonderland talk: first of all, core samples were used to estimate radicesium currently in Steel Creek. How could one estimate the radioactivity of the water (Steel Creek) by taking samples of the sediment? (Unless one were assuming a faulty static picture of suspended solids settling in a uniform manner without transport) I might be misunderstanding the use of the term "core" here. Surely they don't mean a core of water? Or they don't mean the creek floor when they say "Steel Creek"? In any case, it's faulty journalism or faulty logic.

So, 67.1 curies are supposedly accounted for; however, "about 64 curies remain unaccounted for". That represents nearly 100% of the amount supposedly accounted for. In other words, a HUGE AMOUNT. We need better research than this. The explanations for the unaccounted radiocesium do not quite convince me- since so little attention is paid to biological transport mechanisms.

Finally on page 3-45 do we get a slight nod to the importance of biological material. But "average radiocesium concentrations" do not really interest me: it's the concentrations in certain locations which worry me- a subject carefully skirted by the DOEA. I am also not convinced that 10 transects are enough of a study. To say that "The total radiocesium inventory in Steel Creek vegetation is about 0.4 curies" seems to me quite misleading- if the same people doing the report cannot account for 64 curies in another section.

Page 3-47 reveals that "The concentration of radiocesium in wildlife is generally not high in Steel Creek, the Savannah River swamp, and Creek Plantation Swamp". Here again, the word "generally" frighens me: when is "generally" not true? What about the accumulators of the cesium? Bioaccumulation factors of 2000 and 3000 don't really address the problem.

"All individual and population doses were based on the assumption that liquids discharged from L-Reactor and its support facilities are mixed completely in the river before reaching the potential exposure pathways." (pA-11) On what grounds was this assumption made-do others disagree? I can't quite agree with it 100%. Perhaps an IES might help resolve this dilemma.

Finally, we are told on page A-18 that only a 2-year SRP data base was used to compute the meteorological conditions for calculating the dilution of the radioactivity at the site boundary. No discussion at all of the wisdom of using only 2 years was found-and I would ask that more data be gathered.

An Environmental Impact Statement could provide this data. And perhaps better answers than many of those provided by this assessment.

Thank You

Enclosure No. 57

THE RESTART OF L REACTOR
AT THE
SAVANNAH RIVER PLANT

SENATE ARMED SERVICES COMMITTEE PUBLIC HEARING

FEBRUARY 9, 1983.

DOUGLAS C. TEPER
1253 LENOX CIRCLE
ATLANTA, GEORGIA 30306

THE RESTART OF THE L REACTOR AT THE SAVANNAH RIVER PLANT

PRESENTATION AT THE NORTH AUGUSTA PUBLIC HEARING CALLED BY SENATE ARMED SERVICES

FEBRUARY 9, 1983

DOUGLAS C. TEPER
INTERNATIONAL AFFAIRS CONSULTANT

MY NAME IS DOUGLAS CLARK TEPER. MY OFFICE IS CURRENTLY HEADQUARTERED AT 1253 LENOXX CIRCLE, ATLANTA GEOERGIA 30306. I ATTENDED BUSINESS SCHOOL AT THE UNIVERSITY OF GEORGIA AND ALSO RECEIVED A POLITICAL SCIENCE DEGREE AT GEORGIA STATE UNIVERSITY IN ATLANTA. I AM A RESEARCHER IN NUMEROUS FIELDS INCLUDING ENERGY; NUCLEAR PHYSICS; LOCAL, REGIONAL, NATIONAL, AND INTERNATIONAL POLITICS; AND THE ENVIRONMENTAL CONSEQUENCES OF ALL OF THESE.

I AM A PAID CONSULTANT IN INERNATIONAL AFFAIRS. MY MOST RECENT CLIENT IS THE WORLD AFFAIRS COUNCIL OF GEORGIA STATE UNIVERSITY LED BY RETIRED MARINE COLONEL DR. JAMES D. MCBRAYER,JR.,PROFESOR OF INTERNATIONAL GEOPOLITICAL DEFENSE POLITICS. I HAVE PERSONLY CHAIRED A SECURITY COUNCIL OF THE 1981 MODEL UNITED NATIONS AS WELL AS THE 1982 POLITICAL AND SECURITY CONFERENCE. THIS SUMMER IWILL BE ASSIGNED TO RESEARCH STUDY IN THE NATO COUNTRIES OF WESTERN EUROPE FOR DETAILED ANALYSIS OF CURRENT DEFENSE POSTURE AND FUTURE READINESS.

I AM NIETHER A DUPE OF THE INTERNATIONAL COMMUNIST CONSPIRACY NOR HAVE I EVER RECEIVED A PAYCHECK FROM MOSCOW.

THE SAVANNAH RIVER PLANT PAYROLLL AT $280 MILLION A YEAR IS THE STATE OF SOUTH CAROLINA'S LARGEST. RENOVATING L-REACTOR WILL CREATE UP TO 700. construction jobs beyond the normal 8,100 person workforce.That in itself will have an economic impact of the local ecodomybut the extended outlook is promising also. THE CONTINUING EPIDEMIC OF FETAL DEATHS, INFANT MORTALITY CANCER AND HEART DISEASE IN DOWNSTREAM COMMUNITIESWILL KEEP DOCTORS, HOSPITALS, AND MORTICIANS' BUSINESS HOPPING FOR YEARS TO COME. NEW BUSINESSES SUCH AS BOTTLED WATER AND OXYGEN TANKS WILL BE NEEDED BECAUSE OF THE CONTAMINATION.

THE RESTART OF L-REACTOR IS GOOD FOR BUSINESS.

THE ENVIRONMENTAL IMPACT IS MARGINAL. NEW RELEASES OF TRITIUM INTO THE WATER, PLUTONIUM INTO THE SOIL, RADIOACTIVE ZENON AND KRYPTON GASES INTO THE AIR, AS WELL AS IODINE 131 INTO THE MILK, PRESENT NEW OPPORTUNITIES IN EVOLUTIONARY DEVELOPMENT. I'M SURE THEYOUNG CHILDREN,LIKE SENATOR THURMOND's, WHO DRINK THE MILK CONTAMINATED BY RADIOACTIVE IODINE 131 DO NOT MIND THE EVENTUAL THYROID CANCER IN THE NAME OF MORE NUCLEAR WARHEADS.

WHICH BRINGS ME TO OUR THIRD POINT, NATIONAL SECURITY. THIS NATION IS AT WAR. TO DO PROPER BATTLE, WE NEED MORE THEN THE 60 THOUSAND NUCLEAR WEAPONS WE CURRENTLY POSESS. WE NEED AT LEAST 2000 NEW WARHEADS FOR THE MXX: SOME 5000 WARHEADS FOR THE SEA LAUNCHED TRIDENT, 1500 WARHEADS FOR AIR AND GROUND LAUNCHEDCRUISE MISSILESA AND ANOTHER 1000 BOMBS FOR AIRCRAFT. THE NEW TRIDENT I SUBMARINE LAUNCHED MISSILE, THE NEW MARK 12A WARHEAD FOR THE MINUTEMAN III land BASEB ICBM, THE B61 AIRDROPPED NUCLEAR BOMB, THE LANCE MISSILE WARHEAD AND THE WARHEAD FOR THE NEW AIR LAUNCHED CRUISE MISSILE. ANOTHER STRATEGIC AIR-DROPPED BOMB, A NEW GROUND LAUNCHED CRUISE MISSILE, THE PERSHING II EXTENDED RANGE MISSILE AND A NEW EIGHT INCH ARTILLERY SHELL AS WELL AS WARHEADS FOR THE NAVY'S STANDARD AND HARPOON MISSILES AND OF COURSE A BUNCH OF NEUTRON BOMBS. HOW ARE WE SUPPOSE TO WAGE WAR WITHOUT ADEQUATE SUPPLIES OF PLUTONIUM AND TRITIUM?

I REPEAT, HOW ARE WE SUPPOSE TO WAGE WAR WITHOUT AN ADEQUATE SUPPLY OF PLUTONIUM AND TITIUM FOR OUR NUCLEAR BOMBS?

BY CONVENTIONAL FORCES MYBE. MAYBE WE SHOULD NOT BE WAGING THIS WAR. WHO CARES ABOUT THE ENVIRONMENTAL CONSEQUENCES OF RESTARTING THE L REACTOR IF THERE IS NO ENVIRONMENT LEFT. WHO CARES ABOUT WINNING A WAR WHEN THE PREPARATION FOR BATTLE DESTROYS THAT WHICH YOU WERE FIGHTING FOR IN THE FIRST PLACE. SENATORS, I URGE YOU TO QUIT MAKING NUCLEAR BOMBS AND START BUILDING A COUNTRY WITHOUT THIS NUCLEAR MADNESS WHICH WE CAN ALL BE PROUD TO LIVE IN AND FIGHT FOR.

Enclosure No. 58

Testimony Before the Senate Armed Services Committee
on the L-reactor at the Savannah River Plant
Deborah A. Kearney
Savannah, Georgia

I would like to thank you, the Senate Armed Services Committee, for the opportunity to testify and for entering my testimony into the official record of the hearing.

As a very concerned citizen new to the Savannah area, I am angry and admittedly frightened with regard to the planned reconstruction and reactivation of the L-reactor at the Savannah River Plant. I am angry because the National Environmental Policy Act of 1969 clearly indicates that an Environmental Impact Statement is required on any major federal action that could significantly affect the quality of the human environment. The Department of Energy's Environmental Assessment does not adequately meet those requirements. As a citizen, I demand that the Department of Energy obey the law. I am angry and disillusioned that it has refused to do so in spite of the requests and pleas of citizens likely to be affected. It seems to me that my health and safety were totally disregarded, and certainly compromised, during the decision-making process.

I am frightened by the lack of safety features proposed such as no containment dome, no cooling towers to decrease thermal discharge and no independent National Regulatory Commission inspection, all of which are requirements for commercial nuclear power plants. Other public health risks seemingly disregarded by the Department of Energy include the flushing of 46 curies of cesium-137 from the swamp into the river, other potential releases of radioactive contaminants (accidental and intentional), ground water contamination and the hazards of transporting nuclear materials. These health risks potentially threaten my safety because, as a Savannahian,

Page 2
Testimony
Deborah A. Kearney

I am downwind and downriver from those planned and potential releases, because it is possible that in the future Savannah's drinking water may be drawn, at least partially, from the river, and because Savannah is a likely port through which nuclear materials will pass. In addition, I am extremely uncomfortable with the apparent lack of consideration of the cumulative effects of all Savannah River Plant nuclear facilities. The bland reassurance of "no significant impact" in the Environmental Assessment only heightens by concern.

Beyond immediate human health and safety concerns, I am angry that the ecosystem losses especially the loss of (at least) 1000 acres of wildlife habitat are shortsightedly disregarded as insignificant. The discrepancies I've read about in various reports concerning the acreage to be lost certainly warrants further investigation.

I believe the Environmental Impact Statement is a necessity because there are so many unanswered questions and so many unabated fears. I believe it is a necessity because it is required by law. As a citizen, I am asking you, as my representatives in Washington, to demand that an Environmental Impact Statement on the public health and environmental consequences of the L-reactor be completed before further construction and certainly before actual operation commences.

Thank you.

Enclosure No. 59

TESTIMONY OF SUSAN R. GRABER REGARDING L-REACTOR, SRP, BEFORE THE U.S. SENATE ARMED SERVICES COMMITTEE, FEBRUARY 9, 1983, NORTH AUGUSTA, S.C.

I am Susan Graber and I live in Beaufort County, South Carolina. I am here today because the water my family and my community drinks comes from the Savannah River. It is withdrawn from the River downstream from the Savannah River Plant, then travels along an 18 mile canal to the Beaufort Jasper County Water Authority plant where it is treated with chlorine before it comes through my tap.

As all of us are aware, water problems are plaguing this country and, indeed, the world. South Carolina is not immune. In Beaufort we have two vast sources of water: The Ocala Aquifer and the Savannah River. But, there are problems with both sources, which I must mention briefly.

So much water is being withdrawn from our underground source, that a cone of depression has formed under the City of Savannah. The pull from Savannah, and to a lesser extent Hilton Head, has lowered the water level and is causing salt water from the ocean to be drawn into the acquifer system. At the present rate of flow it is estimated that the salt water contamination will reach Hilton Head in 30 years. South Carolina would like to see Savannah use less groundwater, and to draw some water from surface supplies. In order to do that surface water must remain an attractive alternative.

The Beaufort-Jasper County Water Authority--which pulls water from the Savannah River to meet the domestic needs of some 50,000 people--has gone to Court over the siting by Milliken & Company of a $10 million chemical plant on the Savannah River above the Authority's intake point. The Authority appears to be losing its fight---and Milliken may very likely build on that spot without the benefit of an Environmental Impact Statement. What effect will that chemical plant have on the quality of water our community consumes? How might it effect our health? The idea that those questions will not be discussed is unsettling to those of us who would be directly exposed to spills and discharge. It is obvious to Beaufort's citizens that our water authority is deeply concerned about the possible effects of Milliken's siting. They are spending thousands of dollars in legal fees to fight it.

With the start-up of the L-Reactor at the Savannah River Plant will come the flushing of radiocesium into the Savannah River as well as the additional emission of tritium. DOE's Environmental Assessment assumes that the doses of these substances will be at a minimum--that the total exposure of radionuclides from normal operations of the L-Reactor will pose no health risk. But I wonder.

A report prepared by Patterson Associates, Inc. for the Beaufort-Jasper County Water Authority questions DOE's statements of no significant environmental impacts. Patterson questions the seriousness of the hot water flushing of radiocesium from Steel Creek into the Savannah River. Cesium, to some extent, will come through the tap, and it will accumulate in the treatment plant's sludge.

As you are aware, there are alternatives to dischargeing large quantities of scalding water into Steel Creek, thereby flushing cesium into the Savannah River. The most talked about other alternative is cooling towers. NUS Corporation, in their study prepared for the Department of Energy, considered and discussed nine possible cooling systems for the L-Reactor. NUS considered both environmental criteria for choosing a cooling system (cesium transport, land use modification, etc.) and engineering criteria (costs, time requirements, production efficiencies, etc.). The nine alternatives were ranked by preference using these various criteria. From an engineering standpoint, NUS ranks the "discharge to Steel Creek" alternative as the most preferred, and ranks cooling towers third. Based on environmental criteria cooling towers rank first as the most preferred method, small impoundments as least preferred, with discharge to Steel Creek ranking sixth. In conclusion, NUS finds that the most preferred cooling system--considering both environmental and engineering criteria--is the use of cooling towers. In there list of nine, discharge to Steel Creek ranks an unimpressive sixth.

The question naturally arises: Why, then, does the Department of Energy choose to discharge into Steel Creek? The apparent answer: Because discharge to Steel Creek requires no lead time, and because capital costs would be minimal.(But note that NUS estimates that the annual O & M costs for discharge to Steel Creek will be 33% higher than for cooling towers.)

It frightens me to think that all other considerations come after time and money. It frightens me to think that a project the magnitude of the restart of the L-Reactor could be undertaken without broad debate and careful consideration. The Savannah River is my water supply. I am not a scientist ....I do not have the expertise to weigh the quality of DOE's statements, or to weigh its criticism by Patterson. But it appears to me that there is genuine disagreement and legitimate debate regarding the actual impact of the discharge of scalding water into Steel Creek on the surrounding environment and on the water I drink.

It is true that cooling towers will take time, and that an EIS will take time. I am convinced that the issue is important enough to take that time. No nuclear reactor has been brought on line since passage of the National Environmental Policy Act without an Environmental Impact Statement. Why whould the L-Reactor be any different? Why should the citizens of Beaufort, indeed the Savannah River basin, be less pretected by our laws than the people living around other nuclear facilities? We want to know how the L-Reactor may effect our lives, and we have the right to know. I ask this Committee not to allow the people of Beaufort to be short-changed of their right to know and of their right to an open and thorough discussion. Thank you.

February 14, 1983

Senator Strom Thurmond
SR 222
Committee on Armed Services
United States Senate
Washington, D.C. 20510

ATT: Jim Smith

RE: Hearing on L-Reactor
February 9, 1983
North Augusta, S.C.

Dear Senator Thurmond:

As part of my testimony on the environmental impacts of reactivation of the L-Reactor, I would like to include the document prepared by NUS Corporation, "Comparison and Evaluation of Alternative Cooling Systems for L-Reactor", which is enclosed herewith. This analysis, prepared for the Department of Energy, concludes that when both environmental and engineering criteria (including cost and time) are taken into consideration, the use of cooling towers is the cooling system ranked first as Most Preferred. Discharge to Steel Creek is ranked sixth out of nine.

An interesting note: This document was apparently completed prior to August, 1982, but DCE makes no acknowledgement of its existence. When looking for a copy on the literature desk Wednesday I was told the document was not complete and therefore not available.

This document deserves careful consideration, and I hereby request its placement in the official record of Wednesday's hearing.

Thanking you for your interest to this matter, and with kindest regards, I am,

Very truly yours,

Susan R Graber

Susan R. Graber
P. O. Box 607
Port Royal, South Carolina 29935

SRG:jh

COMPARISON AND EVALUATION OF ALTERNATIVE COOLING SYSTEMS FOR L-REACTOR

PREPARED BY

NUS
CORPORATION
A Halliburton Company

FOR
THE DEPARTMENT OF ENERGY

OBJECTIVES

- PREPARE PHYSICAL LAYOUT OF ALTERNATIVES
- EVALUATE ENGINEERING FEASIBILITY
- EVALUATE THERMAL PERFORMANCE
- ASSESS ENVIRONMENTAL EFFECTS
- COMPARE AND EVALUATE ALTERNATIVES

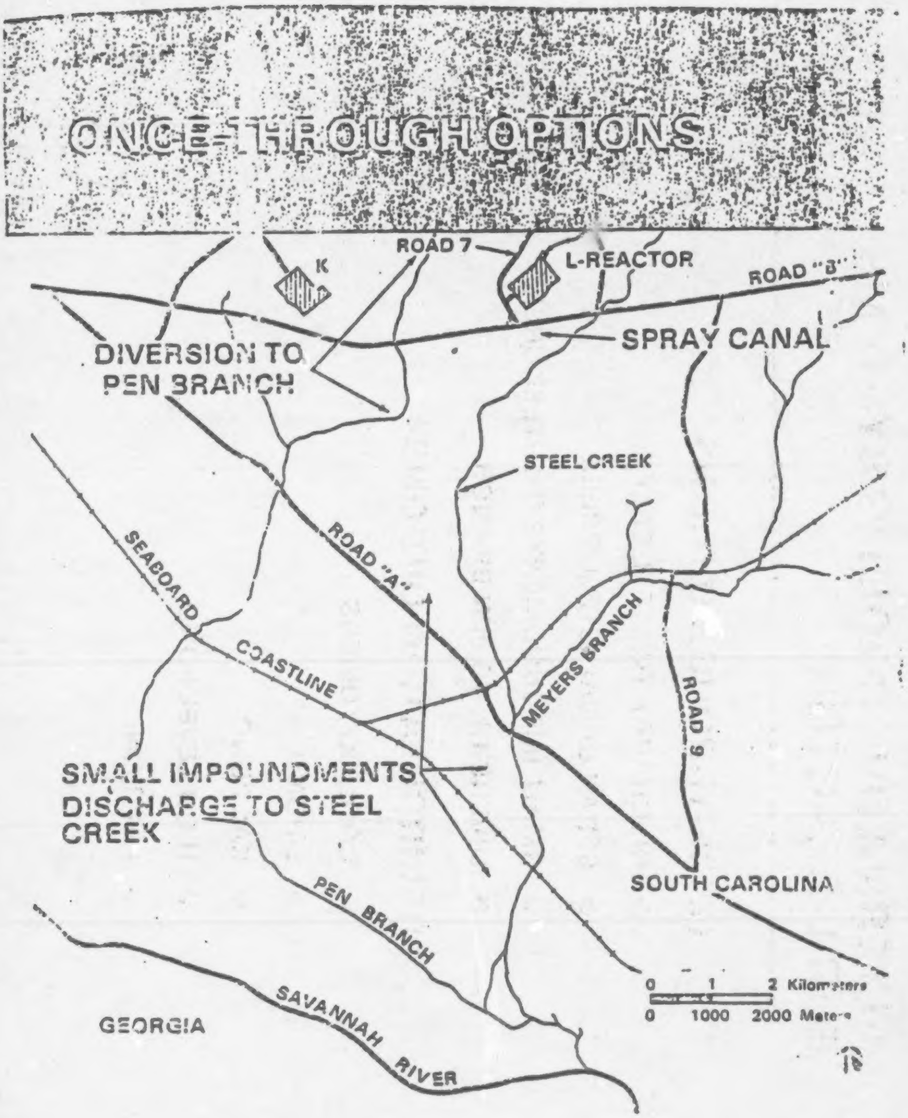
ALTERNATIVE COOLING SYSTEMS FOR L-REACTOR

ONCE-THROUGH OPTIONS

- DISCHARGE TO STEEL CREEK
- SPRAY CANAL/STEEL CREEK
- SMALL IMPOUNDMENTS ON STEEL CREEK
- DIVERSION TO PEN BRANCH

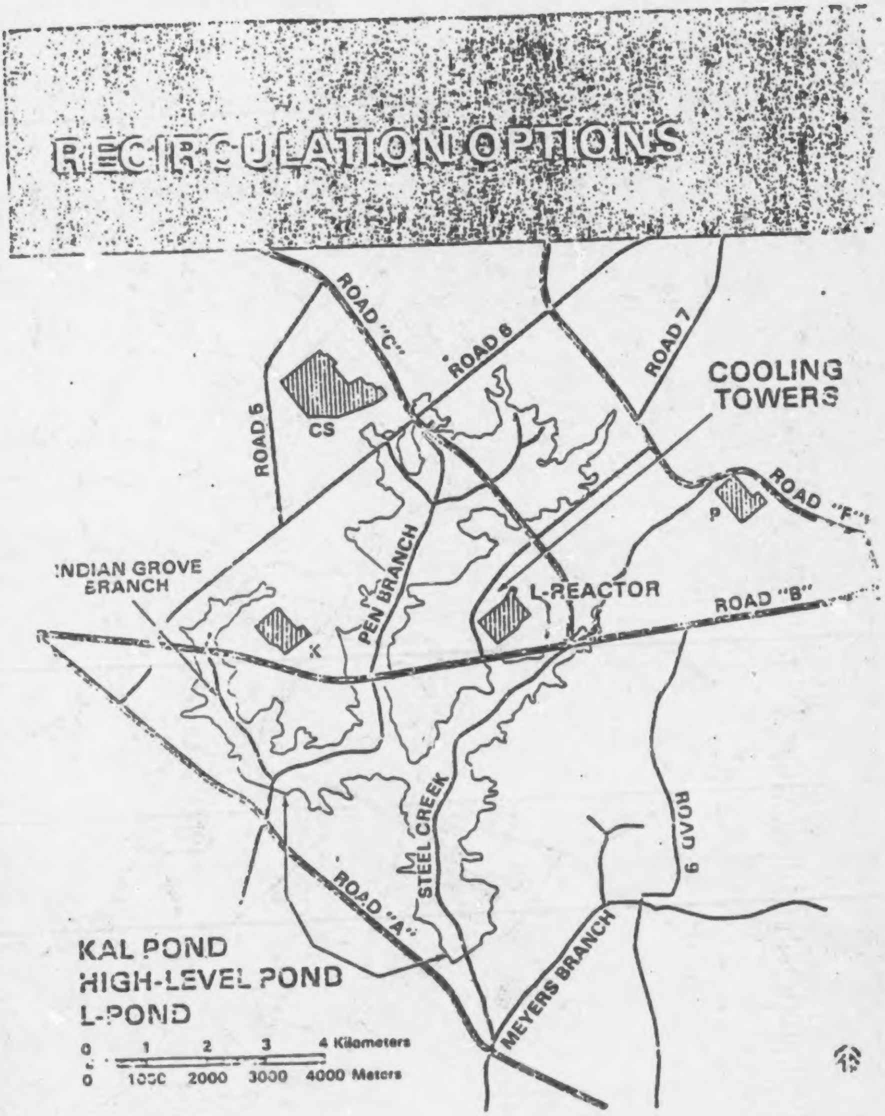
RECIRCULATION OPTIONS

- COOLING TOWERS
- L-POND
- KAL POND
- HIGH-LEVEL POND
- PAR POND



ONCE-THROUGH OPTIONS

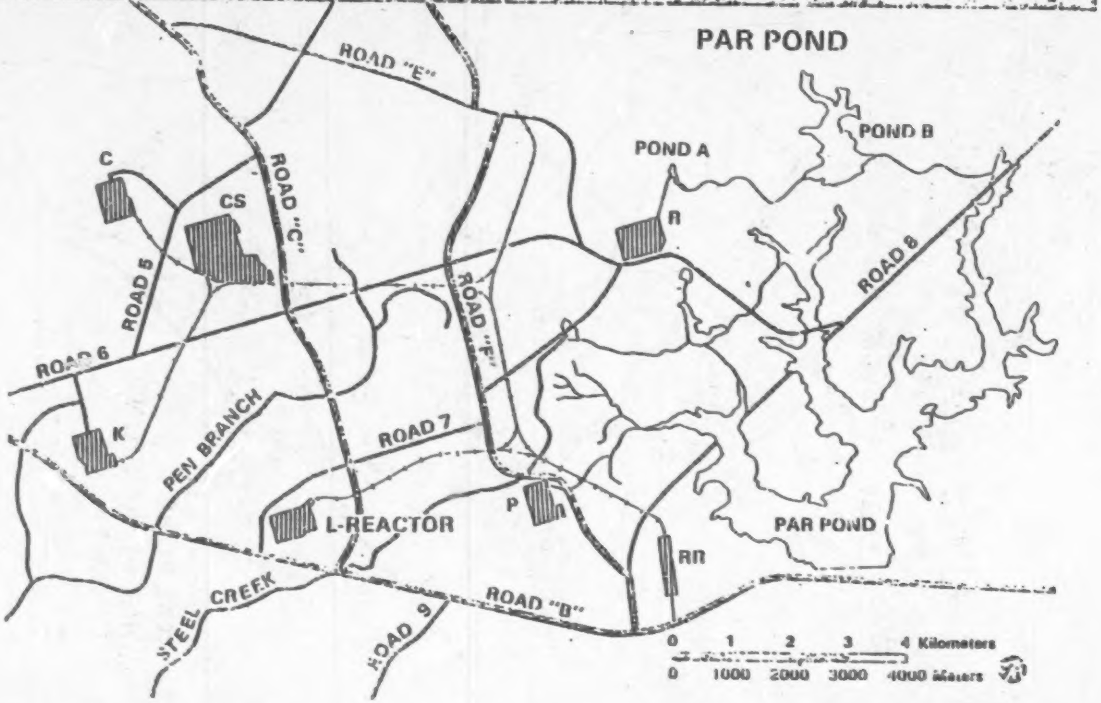
K
ROAD 7
L-REACTOR
ROAD "B"
DIVERSION TO PEN BRANCH
SPRAY CANAL
STEEL CREEK
SEABOARD COASTLINE
ROAD "A"
MEYERS BRANCH
ROAD 9
SMALL IMPOUNDMENTS
DISCHARGE TO STEEL CREEK
SOUTH CAROLINA
PEN BRANCH
SAVANNAH RIVER
GEORGIA
0 1 2 Kilometers
0 1000 2000 Meters



RECIRCULATION OPTIONS

ROAD "C"
ROAD 6
ROAD 7
ROAD 5
CS
COOLING TOWERS
ROAD "F"
P
INDIAN GROVE BRANCH
PEN BRANCH
L-REACTOR
ROAD "B"
K
STEEL CREEK
ROAD 9
ROAD "A"
MEYERS BRANCH
KAL POND
HIGH-LEVEL POND
L-POND
0 1 2 3 4 Kilometers
0 1000 2000 3000 4000 Meters

RECIRCULATION OPTIONS


PAR POND
ROAD "E"
POND A
POND B
C
CS
R
ROAD "C"
ROAD 5
ROAD "F"
ROAD 8
ROAD 6
ROAD 7
PEN BRANCH
K
P
L-REACTOR
PAR POND
RR
STEEL CREEK
ROAD "B"
ROAD 9
0 1 2 3 4 Kilometers
0 1000 2000 3000 4000 Meters

L-REACTOR
COOLING ALTERNATIVE GOALS

- MINIMIZE DEPENDENCY ON SAVANNAH RIVER FOR COOLING WATER
- MINIMIZE TRANSPORT OF CESIUM
- MINIMIZE THERMAL IMPACTS

ENGINEERING CRITERIA

- CAPITAL COSTS
- OPERATION AND MAINTENANCE COSTS
- PRODUCTION EFFICIENCIES
- SCHEDULE (LEAD TIME) REQUIREMENTS
- REQUIREMENTS FOR SAVANNAH RIVER WATER

ESTIMATED CAPITAL COSTS

ALTERNATIVE	CAPITAL COSTS (DOLLARS)	RANK*
DISCHARGE TO STEEL CREEK	1 MILLION	9
SPRAY CANAL/STEEL CREEK	5 MILLION	8
SMALL IMPOUNDMENTS ON STEEL CREEK	3-14 MILLION	6
DIVERSION TO PEN BRANCH	4-6 MILLION	7
COOLING TOWERS	20-25 MILLION	5
L-POND	35-40 MILLION	3
KAL POND	60-65 MILLION	1
HIGH-LEVEL POND	50-55 MILLION	2
PAR POND	30-35 MILLION	4

*THE MOST PREFERRED ALTERNATIVE HAS THE HIGHEST NUMERICAL RANKING.

ESTIMATED ANNUAL OPERATION AND MAINTENANCE COSTS

ALTERNATIVE	OPERATION AND MAINTENANCE COSTS (DOLLARS)	RANK*
DISCHARGE TO STEEL CREEK	5.3 MILLION	2.5
SPRAY CANAL/STEEL CREEK	5.3 MILLION	2.5
SMALL IMPOUNDMENTS ON STEEL CREEK	5.3 MILLION	2.5
DIVERSION TO PEN BRANCH	5.3 MILLION	2.5
COOLING TOWERS	4.0 MILLION	6
L-POND	3.0 MILLION	8
KAL POND	3.0 MILLION**	8
HIGH-LEVEL POND	3.0 MILLION	8
PAR POND	4.3 MILLION	5

*THE MOST PREFERRED ALTERNATIVE HAS THE HIGHEST NUMERICAL RANKING.

**FOR L-REACTOR ONLY.

ESTIMATED PRODUCTION EFFICIENCY

ALTERNATIVE	PRODUCTION EFFICIENCY (%)	RANK*
DISCHARGE TO STEEL CREEK	100%	7.5
SPRAY-CANAL/STEEL CREEK	100%	7.5
SMALL IMPOUNDMENTS ON STEEL CREEK	100%	7.5
DIVERSION TO PEN BRANCH	100%	7.5
COOLING TOWERS	96-98%	3.5
L-POND	96-98%	3.5
KAL POND	96-98%	3.5
HIGH-LEVEL POND	<96%	1
PAR POND	96-98%	3.5

*THE MOST PREFERRED ALTERNATIVE HAS THE HIGHEST NUMERICAL RANKING.

ESTIMATED SCHEDULE (LEAD TIME) REQUIREMENTS

ALTERNATIVE	SCHEDULE (LEAD TIME) REQUIREMENTS	RANK*
DISCHARGE TO STEEL CREEK	0	9
SPRAY CANAL/STEEL CREEK	12 MONTHS	8
SMALL IMPOUNDMENTS ON STEEL CREEK	12–18 MONTHS	7
DIVERSION TO PEN BRANCH	18 MONTHS	6
COOLING TOWERS	24 MONTHS	5
L-POND	42 MONTHS	2
KAL POND	48 MONTHS	1
HIGH-LEVEL POND	32 MONTHS	4
PAR POND	36 MONTHS	3

*THE MOST PREFERRED ALTERNATIVE HAS THE HIGHEST NUMERICAL RANKING.

ENVIRONMENTAL CRITERIA

- IMPINGEMENT AND ENTRAINMENT
- DISCHARGE AND TRANSPORT OF RADIONUCLIDES
- ATMOSPHERIC DISCHARGES
- LIQUID EFFLUENT DISCHARGE
- LAND USE AND HABITAT MODIFICATION
- ENDANGERED AND THREATENED SPECIES
- ARCHAEOLOGICAL RESOURCES
- PERMIT REQUIREMENTS

IMPINGEMENT AND ENTRAINMENT

ALTERNATIVE	IMPINGEMENT[a]	ENTRAINMENT[b]	RANK[c]
DISCHARGE TO STEEL CREEK	1,700	12.7×10^6	2.5
SPRAY CANAL/STEEL CREEK	1,700	12.7×10^6	2.5
SMALL IMPOUNDMENTS ON STEEL CREEK	1,700	12.7×10^6	2.5
DIVERSION TO PEN BRANCH	1,700	12.7×10^6	2.5
COOLING TOWERS	250	1.8×10^6	8
L-POND	425	3.1×10^6	7
KAL POND	735	5.4×10^6	9
HIGH-LEVEL POND	455	3.4×10^6	6
PAR POND	670	5.0×10^6	5

[a] NUMBER OF FISH IMPINGED ANNUALLY.
[b] NUMBER OF FISH EGGS AND LARVAE ENTRAINED ANNUALLY.
[c] THE MOST PREFERRED ALTERNATIVE HAS THE HIGHEST NUMERICAL RANKING

TRANSPORT OF RADIONUCLIDES (Ci/YR) TO THE SAVANNAH RIVER BY LIQUID EFFLUENT DISCHARGE

ALTERNATIVE	137-CESIUM	TRITIUM	RANK*
DISCHARGE TO STEEL CREEK	9.8	26,750	1
SPRAY CANAL/STEEL CREEK	9.8	26,500	2
SMALL IMPOUNDMENTS ON STEEL CREEK	5.8	25,660	3
DIVERSION TO PEN BRANCH	0.1	26,750	4
COOLING TOWERS	0.2	26,040	5
L-POND	0.1	17,130	8
KAL POND	0.1	3,570	9
HIGH-LEVEL POND	0.2	23,270	7
PAR POND	0.2	23,720	6

*THE MOST PREFERRED ALTERNATIVE HAS THE HIGHEST NUMERICAL RANKING.

ESTIMATED REQUIREMENTS FOR SAVANNAH RIVER WATER

ALTERNATIVE	REQUIREMENTS FOR SAVANNAH RIVER WATER	RANK*
DISCHARGE TO STEEL CREEK	11 m^3/s	2.5
SPRAY CANAL/STEEL CREEK	11 m^3/s	2.5
SMALL IMPOUNDMENTS ON STEEL CREEK	11 m^3/s	2.5
DIVERSION TO PEN BRANCH	11 m^3/s	2.5
COOLING TOWERS	1.6 m^3/s	8
L-POND	2.7 m^3/s	7
KAL POND	2.4 m^3/s**	9
HIGH-LEVEL POND	2.9 m^3/s	6
PAR POND	4.3 m^3/s	5

*THE MOST PREFERRED ALTERNATIVE HAS THE HIGHEST NUMERICAL RANKING.

**CONSUMPTION BY L-REACTOR ONLY.

EFFECTS OF ATMOSPHERIC DISCHARGE

ALTERNATIVE	TRITIUM[a]	FOGGING[b]	ICING[c]	DRIFT DEPOSITION[d]	RANK
DISCHARGE TO STEEL CREEK	7,780	1,800	240	0	5
SPRAY CANAL/ STEEL CREEK	7,980	1,815	260	1	4
SMALL IMPOUNDMENTS ON STEEL CREEK	8,650	1,875	415	0	2
DIVERSION TO PEN BRANCH	7,780	3,293	460	0	1
COOLING TOWERS	8,380	70	45	30	3
L-POND	8,870	130	115	0	7
KAL POND	10,320	25	15	0	6
HIGH-LEVEL POND	8,140	10	0	0	9
PAR POND	8,140	20	15	0	8

[a] Ci/YR.
[b] HRS/YR (MAXIMUM) WHERE VISIBILITY IS LESS THAN 0.3 KM ON LEEWARD SIDE.
[c] HRS/YR (MAXIMUM) OF HORIZONTAL ICE ACCUMULATION WITHIN 0.3 KM OF SOURCE ON LEEWARD SIDE.
[d] LBS/ACRE/YEAR.

PREDICTED MAXIMUM TEMPERATURES (°C) AT SELECTED LOCATIONS FOR ONCE-THROUGH COOLING SYSTEMS.

ALTERNATIVE	OUTFALL CANAL	DISCHARGE FROM POND OR CANAL	ROAD A-14	ROAD A	ROAD A-17	PEN BRANCH DELTA	STEEL CREEK DELTA	MOUTH OF STEEL CREEK
DISCHARGE TO STEEL CREEK	79	NA	67	56	48	NA	44	32
SPRAY CANAL/ STEEL CREEK	79	74	61	54	46	NA	42	31
SMALL IMPOUNDMENTS ON STEEL CREEK	79	33	NA	32	30	NA	30	29
DIVERSION TO PEN BRANCH	79	--	--	77	67	58	30	30

NA -- NOT APPLICABLE.

EFFECTS OF LIQUID EFFLUENT DISCHARGE

ALTERNATIVE	DELTA GROWTH (ACRES/YR)	SWAMP ΔT (°C)	TEMPERATURE INCREASE OF SAVANNAH RIVER (°C)	RANK
DISCHARGE TO STEEL CREEK	3.0	17	0.66	2
SPRAY CANAL/STEEL CREEK	3.0	13	0.64	3
SMALL IMPOUNDMENTS ON STEEL CREEK	1.8	8	0.60	4
DIVERSION TO PEN BRANCH	18.0	31	0.62	1
COOLING TOWERS	0	0	0	6.5
L-POND	0	0	0	6.5
KAL POND	0	0	0	9
HIGH-LEVEL POND	0	0	0	6.5
PAR POND	0	0	0	6.5

LAND USE AND HABITAT MODIFICATION

ALTERNATIVE	AREA IMPACTED (ACRES)	RANK*
DISCHARGE TO STEEL CREEK	1010	5
SPRAY CANAL/STEEL CREEK	950	6.5
SMALL IMPOUNDMENTS ON STEEL CREEK	950	6.5
DIVERSION TO PEN BRANCH	1290	4
COOLING TOWERS	30	9
L-POND	1300	3
KAL POND	2620	2
HIGH-LEVEL POND	1790	1
PAR POND	50	8

*THE MOST PREFERRED ALTERNATIVE HAS THE HIGHEST NUMERICAL RANKING.

IMPACT TO ENDANGERED AND THREATENED SPECIES

ALTERNATIVE	IMPACT	RANK*
DISCHARGE TO STEEL CREEK	YES	2
SPRAY CANAL/STEEL CREEK	YES	2
SMALL IMPOUNDMENTS ON STEEL CREEK	YES	2
DIVERSION TO PEN BRANCH	NO	8
COOLING TOWERS	NO	9
L POND	YES	5
KAL POND	YES	6
HIGH-LEVEL POND	NO	7
PAR POND	YES	4

*RANK WAS BASED ON THE ESTIMATED NUMBER OF AMERICAN ALLIGATORS AND COLONIES OF THE RED-COCKADED WOODPECKER THAT WOULD BE IMPACTED. THE MOST PREFERRED ALTERNATIVE HAS THE HIGHEST NUMERICAL RANKING.

IMPACT TO ARCHAEOLOGICAL RESOURCES

ALTERNATIVE	NUMBER OF SITES	RANK
DISCHARGE TO STEEL CREEK	5	4
SPRAY CANAL/STEEL CREEK	5	4
SMALL IMPOUNDMENTS ON STEEL CREEK	5	4
DIVERSION TO PEN BRANCH	7-8	2
COOLING TOWERS	0	9
L-POND	2-3	6
KAL POND	8-10	1
HIGH-LEVEL POND	1-2	7
PAR POND	1	8

ESTIMATED TIME (MONTHS) FOR OBTAINING ENVIRONMENTAL PERMITS

ALTERNATIVE	COE*	NPDES*	RANK
DISCHARGE TO STEEL CREEK	NO	EXISTING	8.5
SPRAY CANAL/STEEL CREEK	2-4	1	3
SMALL IMPOUNDMENTS ON STEEL CREEK	2-4	1	3
DIVERSION TO PEN BRANCH	2-4	2-3	6
COOLING TOWERS	NO	NO	8.5
L-POND	2-4	1	3
KAL POND	2-4	1	3
HIGH LEVEL POND	2-4	1	3
PAR POND	NO	1	7

*COE — U.S. ARMY CORPS OF ENGINEERS 404 PERMIT
NPDES — NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

RANKING OF ALTERNATIVES BASED ON ENVIRONMENTAL CRITERIA

ALTERNATIVE	RANK TOTALS	EVALUATION
COOLING TOWERS	58.0	MOST PREFERRED
PAR POND	52.5	↓
HI-LEVEL POND	46.5	↓
L-POND	45.5	↓
KAL POND	45.5	↓
DISCHARGE TO STEEL CREEK	30.0	↓
DIVERSION TO PEN BRANCH	28.5	↓
SPRAY CANAL/STEEL CREEK	27.0	↓
SMALL IMPOUNDMENTS ON STEEL CREEK	27.0	LEAST PREFERRED

RANKING OF ALTERNATIVES BASED ON ENGINEERING CRITERIA

ALTERNATIVE	RANK TOTALS	EVALUATION
DISCHARGE TO STEEL CREEK	30.5	MOST PREFERRED
SPRAY CANAL/STEEL CREEK	28.5	
COOLING TOWERS	27.5	
SMALL IMPOUNDMENTS ON STEEL CREEK	25.5	
DIVERSION TO PEN BRANCH	25.5	
L-POND	23.5	
KAL POND	22.5	
HI-LEVEL POND	21.0	
PAR POND	20.5	LEAST PREFERRED

RANKING OF ALTERNATIVES BASED ON ENGINEERING AND ENVIRONMENTAL CRITERIA

ALTERNATIVE	RANK TOTALS	EVALUATION
COOLING TOWERS	85.5	MOST PREFERRED
PAR POND	73.0	↓
L-POND	69.0	
KAL POND	67.5	
HI-LEVEL POND	67.5	
DISCHARGE TO STEEL CREEK	60.5	
SPRAY CANAL/STEEL CREEK	55.5	
DIVERSION TO PEN BRANCH	54.0	
SMALL IMPOUNDMENTS ON STEEL CREEK	52.5	LEAST PREFERRED

CONCLUSIONS

- RECIRCULATION SYSTEMS AS A GROUP RANKED SIGNIFICANTLY HIGHER THAN ONCE-THROUGH SYSTEMS.
- BASED ON RANK TOTALS, COOLING TOWERS WERE THE PREFERRED OPTION AND SMALL IMPOUNDMENTS ON STEEL CREEK WERE THE LEAST PREFERRED OPTION.
- COOLING TOWERS RANKED SIGNIFICANTLY HIGHER THAN THE SPRAY CANAL AND SMALL IMPOUNDMENTS ON STEEL CREEK.
- NONE OF THE RECIRCULATION SYSTEMS CAN BE OPERATIONAL BY THE RE-START DATE OF OCTOBER 1983.
- AFTER AUGUST 1, 1982, ONLY THE DIRECT DISCHARGE TO STEEL CREEK CAN MEET THE RE-START DATE OF OCTOBER 1983.

Enclosure No. 60

Testimony On The Reactivation Of The L-Reactor

I am a science teacher at an environmental education center in Savannah, Georgia. I teach about the environment and the interrelatedness of everything on earth. As an ecologist I am concerned with, not just the immediate present but the distant future. For this reason, I am very interested in the effects of the reactivation of the L-Reactor. I share with Senator Mattingly a fear of "the contamination of our water supply and a general deterioration of the environment as a result of the reopening of the L-Reactor at the Savannah River Plant." This fear has motivated me to strongly request that this Committee require the production of an Environmental Impact Statement on the L-Reactor, in compliance with the National Environmental Policy Act. The federal government has a responsibility to it's citizens to complete an extensive assessment before commencing L-Reactor operations.

I have reached this cautious conclusion largely as a result of my studies and professional work as an interpreter of the natural world. There are three basic principles in the study of ecology. They are 1) There is no such thing as a free lunch, 2) Everything goes somewhere, and 3) Everything is connected to everything else. Our continuing insensitivity to these principles has resulted in numerous environmental problems. I am most interested in seeing to it that our government is not responsible for a possible environmental disaster happening 88 miles upriver from Savannah. There are many serious questions which have not even been asked, much less answered, about the L-Reactor. I would like to see a thorough and systematic study, based on these principles, done prior to reactivation. I do not believe that the Environmental Assessment done in August, 1982 is a thorough and systematic study.

The first ecology principle states - There is no such thing as a free lunch. There is much disagreement over the impact of resumption of operations at the L-Reactor, but everyone agrees that there will be negative consequences. The Department of Energy Assessment would have us believe that the environmental price for reactivation is rather cheap. Seen from a point in the future, even the minimal negative impacts foreseen in the Assessment will not seem cheap at all when added to other Savannah River Plant induced pollutants. However, a full Environmental Impact Statement, done in the present, would give us a much clearer picture of the true environmental price tag of this reactor. And with this additional information, we could put the trade off in perspective. We should beaware of as many consequences as possible and then plan to minimize them.

The second principle states - Everything goes somewhere. In spite of the Department of Energy's Assessment claim, that accidents are "highly unlikely," accidents do happen. The Three Mile Island accident was one that we were told should never have happened. It did. And it will cost us millions of dollars to clean up. There is a very real possibility of a major release of radioactivity from an L-Reactor without a containment dome. The Three Mile Island accident occurred within a containment dome. An accident of similar dimensions at the L-Reactor, without a dome, would amount to an incredible ecological and public health disaster. I am concerned not only about the immediate effects of such a disaster but the accumulated long range affects of radioactive pollutants in the ecosystem. Everything goes somewhere. The problem with accidental and regularly released radioactive isotopes is that they go somewhere before they have disintegrated into harmless elements. Studies have shown that if there is exposure, there is damage and that it will show up statistically.

The third principle - Everything is connected to everything else. I believe that negative impacts from the plant will eventually end up as negative impacts upon human bodies most certainly through the food chain. The Environmental Assessment states that the restart of the L-Reactor will essentially have insignificant environmental repercussions. This is a fallacious statement. A wrong decision made about the L-Reactor will be felt upon this area from now until well into the future. A poisoned future environment is easily connected with inadequate preparations and safeguards established today.

In conclusion, I would like to quote President John F. Kennedy when he spoke of responsibility and his concern that, through science and technology, we were thoughtlessly causing great damage around the world.

President Kennedy said, "The problem is difficult because it is hard to know in advance whether the effects of a particular experiment will help or harm mankind. The government has the clear responsibility to weigh the importance of wide-scale experiments against the possibility of destructive effects." I understand that the L-Reactor is not an experiment. However, the President's concern for governmental responsibility certainly applies in this case.

A decision not to call for an Environmental Impact Statement has the potential of creating a legacy which may not be soon forgotten. Thermal pollution, the elimination of wetland habitat, and most importantly the creation of even more nuclear waste material, will not be the only problems generated by the L-Reactor. It is imperative that we prepare a truly thorough study before creating unforeseen health, safety, and environmental problems.

William T. McLaughlin
Jan. 31, 1983

William T. McLaughlin
January 31, 1983

Enclosure No. 61

Feb. 9, 1983 Testimony of: Barbara W. Wise
Re: "L" Reactor Startup
Before: Senate Armed Services Committee
North Augusta, South Carolina

Committee Members:

I thank you for this opportunity to present my concerns about this controversial issue. My name is Barbara Wise; I have lived in Augusta for nearly 7 years and have been employed as a high school counselor here for that length of time. As a resident of Augusta, I feel that it is most appropriate for me as a private citizen to have a chance to respond to this action — that of the "L" Reactor Startup — which could impact so drastically on me, on my family and on my community.

As brief background information for my testimony, let me say that, initially, I viewed the development of the nuclear industry with hopeful receptivity and naive trust; hoping and trusting that this sophistocated technology would be handled with equally sophistocated wisdom — for the enhancement of life. In short, it was touted as a technology which could solve the most prevalent problems on earth. What it has done is, in fact, quite the opposite. It has added immeasureably to the burden of problems we are facing today.

In my reading about the history of the nuclear industry, most recently, ~~a~~ Ford's well documented work, ~~Daniel Ford's~~ The Cult of the Atom, subtitled The Secret Papers of the Atomic Energy Commission, I have become increasingly horrified at the deception and coverups that are inherent to nuclear politics. I have been astonished at the willingness of that industry to subject whole populations to imminent danger, varying in degree from mild radiation contamination to sudden death. a recent federal report (Sandia Labs 1982) estimates a worst case reactor accident ~~causing~~ could cause such 100,000 deaths and $14. billion in property damage. #1. It is an interesting and notable contradiction that the industry's advocates are full of rhetoric about plant safety, reactor safety, even radiation safety, etc, etc, but at the same time they are unwilling to back these claims by accepting financial responsibility for a nuclear accident. Witness the Price-Anderson Act - enacted in ~~the 50's~~ 1957 specifically to limit the industry's liability to a minute fraction of the estimated cost of ~~in~~ civil and property damage ~~due to a~~ resulting from a nuclear accident.

It is in this climate and in the aftermath of the Three Mile Island accident that I want to respond to the "L" Reactor Startup. The industry proposal here is to reactivate a 29 year old reactor (already nearing the end of its life expectancy of 30→40 yrs) which has been mothballed since 1968. ~~[illegible]~~ — ~~Protection Agency regulations~~ further, it proposes to proceed without ~~a~~ doing a proper Environmental Impact Study ~~[illegible]~~ ~~[illegible]~~ which is — in blatant violation of Environmental Protection Agency regulations. It is against the law! An even more flagrant abuse of EPA standards is the plan to proceed w/ the restart of the "L" Reactor w/out a containment dome which is the protection device that protected the Harrisburg population from a much worse disaster in the Three Mile Island accident 4 years ago. In 1968 the EPA ruled that all new reactors are required to ~~had to~~ have containment domes. As an area citizen, I have to ask, how much more dangerous is it to fire up and old reactor than a new one, and why wouldn't it be ~~[illegible]~~ as subject to at least as stringent regulations as a new reactor? ~~The answer is, I'm afraid,~~.

All of this, tho, I'm responding to as a relatively informed lay-person. What I would like to conclude with ~~however~~ is my observations as a professional in the field of education. I would like to comment briefly on the psychological effects on ~~today's~~ some of the young people of this area with whom ~~that~~ I have had direct contact. ~~[illegible]~~ Many of them ~~to~~ have reacted to the international nuclear situation as well as specifically to the problems associated with living in ~~the shadow~~ close proximity to the Savannah River plant - to many "the bomb plant." The "L" Reactor Controversy has certainly contributed to their anxiety at being used as laboratory animals in the on-going nuclear experiment. Many student's articulate the feeling that they have no future — that their lives

5

are shadowed by an ominous
technology that is out of control —
for example, ~~students know~~ it is common knowledge among students
that even after 30 some odd years
this industry still has not come up with
a viable solution to handling its'
own radioactive waste — of which
there is already over 25 mill
gallons of Hi level waste in temp. containment at SRP
~~And this to the age~~ In this age of the
high-tech fix — 30 years seems
like a long time to ~~[illegible]~~ students ~~Students~~ they
have articulated to me. Their
feelings of alienation ~~and their~~ ~~the~~ and of their
impotency to deal with problems of
this magnitude. ~~Some~~ one common
response is to revert to a "Do it
now" mode — ~~of enjoying huge pleasures of~~ — of grabbing fast
pleasures now ~~and~~ with a de-emphasis
on a reasonable preparation for
the future. ~~[illegible]~~ Many ~~are~~ have become amotivational.

Another common response is
psychic numbing which is frequently
referred to in the literature — as a

method of coping w/ impending disaster. that is to simply become an emotional zombie - in an attempt to protect the self from an unacceptable reality. I frequently see these days - students who have no emotional affect about anything - includ. death of parents - assault - rape or other seemingly emotional experiences.

So, in my hurried testimony I would like to say that I am in total agreement w/ U of Conc. Scientists when they demand that in the future ~~it will~~ — an assessment of psycholog. effects be included in an Env Impact Study for the commissioning of all new reactors.

I thank you for this opportunity to speak for a disenfranchised group — or so they regard themselves — the young people of this area and I want to express their hope

7/

that – in the near future – our generation – the decision making adults of today will begin to make more sane decisions with regard to the fate of their earth.

Thank you

Enclosure No. 62

TOWN OF JOHNSTON
PHONE 275-2488

MAYOR PRO-TEM
E O DUKES

POLICE COMM.
E O DUKES CHM
T C OWENS
CHARLES LUCAS

REVENUE SHARING COMM.
T C OWENS CHM
E O DUKES
DAVIS PARKMAN

SANITATION COMM.
W. L. HARLEY, CHM
MIKE CASEY
CHARLES LUCAS

MAYOR
E FORREST EDWARDS

CLERK
MRS WINNIE MAE CLARK

JOHNSTON, S. C.

FIRE COMM.
DAVIS PARKMAN CHM
MIKE CASEY
CHARLES LUCAS

LICENSE & TAX COMM
MIKE CASEY, CHM
DAVIS PARKMAN
T C OWENS

STREET COMM.
CHARLES LUCAS CHM
T C. OWENS
W L HARLEY

RECREATION COMM.
W L HARLEY CHM
DAVIS PARKMAN
MIKE CASEY

January 27, 1983

Senator Strom Thurmond
Senate Office Building
Washington, D.C. 20510

Dear Senator Thurmond:

During the hearings you and Senator Mattingly plan to hold in North Augusta, S.C., on February 9, 1983, the Johnston Town Council wishes you to consider the resolution passed unanimously on January 27, 1983 in support of the restart of L-Reactor at the Savannah River Plant.

The council members have noted in the press the related comments by various groups throughout the state, as well as by some of the leadership in state government. The council wishes you to consider our collective views as the elected governing body of Town of Johnston.

A copy of our resolution on restart of L-Reactor is attached.

Sincerely,

E. Forrest Edwards
Mayor

EFE/df

encl.

STATE OF SOUTH CAROLINA
TOWN OF JOHNSTON

RESOLUTION

WHEREAS, Be it known that the restart of L-Reactor is vital t the national defense and a major delay in restart could endanger our nation's security, and

WHEREAS, Be it known that L-Reactor operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968, and

WHEREAS, Be it known that the impact of L-Reactor operations on the streams of the Savannah River Plant and on the Savannah River has been demonstrated and the consequences are known to have had negligible effects on human health and safety and had inflicted no permanent damage to the environment.

NOW, THEREFORE, BE IT KNOWN that the Town Council of Johnston urges the various governmental offices and agencies to reach prompt agreement so that the restart of L-Reactor will not be delayed beyond its scheduled date.

This Resolution duly adopted the 27th day of January, 1983.

E. Forrest Edwards, Mayor
Johnston Town Council

ATTEST:

Winnie Mae Clark

Winnie Mae Clark, Clerk/Treasur

Enclosure No. 63

THE TOWN OF TRENTON
south carolina
INCORPORATED DECEMBER 20 1877
P. O. Box 36 — 29847

January 26, 1983

Senator Strom Thurmond
Senate Office Building
Washington, DC 20510

Dear Senator Thurmond:

During the hearings you and Senator Mattingly plan to hold in North Augusta, S.C., on February 9, 1983, the Trenton Town Council wishes you to consider the resolution passed unanimously on January 26, 1983, in support of the restart of L-Reactor at the Savannah River Plant. The Council members have noted in the press the related comments by various groups throughout the State as well as by some of the leadership in State Government. The Council wishes you to consider our collective views as the elected governing body of Trenton. A copy of our resolution on restart of L-Reactor is attached.

Very Sincerely,

THE TOWN OF TRENTON

Phil Musgrave

PH/sg

RESOLUTION OF TRENTON TOWN COUNCIL

ON

RESTART OF L-REACTOR AT THE SAVANNAH RIVER PLANT

PASSED ON JANUARY 26, 1983

Be it known that the restart of L-Reactor is vital to the national defense and a major delay in restart could endanger our nation's security.

Be it known that L-Rector operated safely from its initial startup in 1956 until it was shut down and placed on standby in 1968.

Be it known that the impact of L-Reactor operations on the streams of the Savannah River Plant and on the Savannah River has been demonstrated and the consequences are known to have had negligible effects on human health and safety and had inflicted no permanent damage to the environment.

Therefore

Be it known that the Trenton Town Council urges the various governmental offices and agencies to reach prompt agreement so that the restart of L-Reactor will not be delayed beyond its scheduled date.

JANUARY 26, 1983

Enclosure No. 64

February 7, 1983

RESOLUTION

WHEREAS, it has been announced that The Department of Energy intends to restart the L-Reactor at the Savannah River Plant, in Aiken South Carolina.

WHEREAS, President Jimmy Carter in 1980 did allocate priorities so as to bring the L-Reactor into production.

WHEREAS, we the Aiken County Ministerial Alliance are pastors and/or ministers to the spiritual needs of the Citizens of Aiken County and other counties.

WHEREAS, a certain number of the people we minister to are employed and/or directly effected by the Savannah River Plant.

WHEREAS, The Aiken County Ministerial Alliance and other ministers are concerned about not only the spiritual needs of our flock but the physical, emotional, financial, health and safety needs.

BE IT RESOLVED, that we go on record as being in favor of the restart of the L-Reactor.

[illegible]	Rte. 1, Box 324, [illegible] SC	663-7902
President	Address	Phone
James B. Williams	[illegible]	
Alfred Holmes	685 Edve st aiken	648-5457
[illegible]	Route 1 Box 137 [illegible] S.C.	
[illegible]	[illegible]	
Elder Elijah Markey	Rev J E Dozier	
[illegible]	Dea Joseph Curry R1 Box 1695 Aiken	
[illegible]	Rev [illegible] Curry	
Ronnie Davis	Min [illegible] D. Lewis	
Rev Carl [illegible]	[illegible]	

Enclosure No. 65

Mr. J. S. McMillan
Allendale
South Carolina 29810

February 7, 1983

Environmental Hearing on L. Reactor
February 9, 1983

Gentlemen:

I am a farmer from Allendale County, South Carolina. I live approximately Thirty (30) miles South of the L. Reactor. I know that the radionuclides from this reactor will get into our water, our atmosphere, our crops and then into our bodies. I want well-qualified scientists (that do not work for the Savannah River Plant) to make an assessment as to the amount and kinds of nuclides to be released and the manner in which they will escape from the reactor.

I want the people in this state to be informed of the amounts of radiation that are released from the Savannah River Plant, and from all nuclear reactors in the state. DHEC should have this responsibility but to my knowledge they have not notified the people of South Carolina of the amount of radiation they are receiving. I have reports that the water in Steel Creek on the Savannah River, which by the way is a public landing, has from 15 to 30 times background radiation. The days that the Savannah River Plant will remain a sacred cow are over. The truth about the contamination released from this plant must be made public. We demand this.

I have a gut feeling that we in this area have a higher rate of cancer and heart diseases than other sections of the United States. I request or demand that a public health study be started immediately of the surrounding populace and compared to other areas.

Sincerely,

J. S. McMillan